

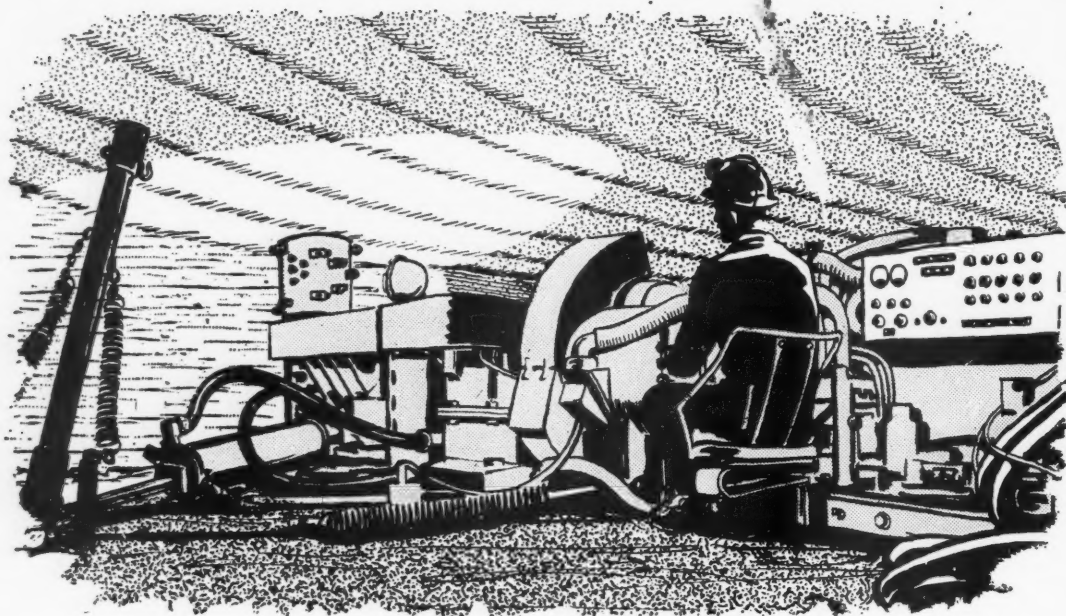
FARM CHEMICALS

May Volume 123 No. 5 50 Cents

Pioneer Journal of the Industry



**What's behind our
farm chemicals
credit dilemma?**



P.C.A. Was First To Develop Continuous Potash Mining

Prior to World War I, this nation was completely dependent on foreign potash. Today, P.C.A. is the world's largest producer of Muriate of Potash helping assure you of a ready and continuous source of supply. Continuous mining developed by P.C.A. is but one of the many ways we are better serving industry through improved mining methods and higher quality. No finished product can be better than its ingredients . . . make sure that you use the best . . . specify P.C.A.



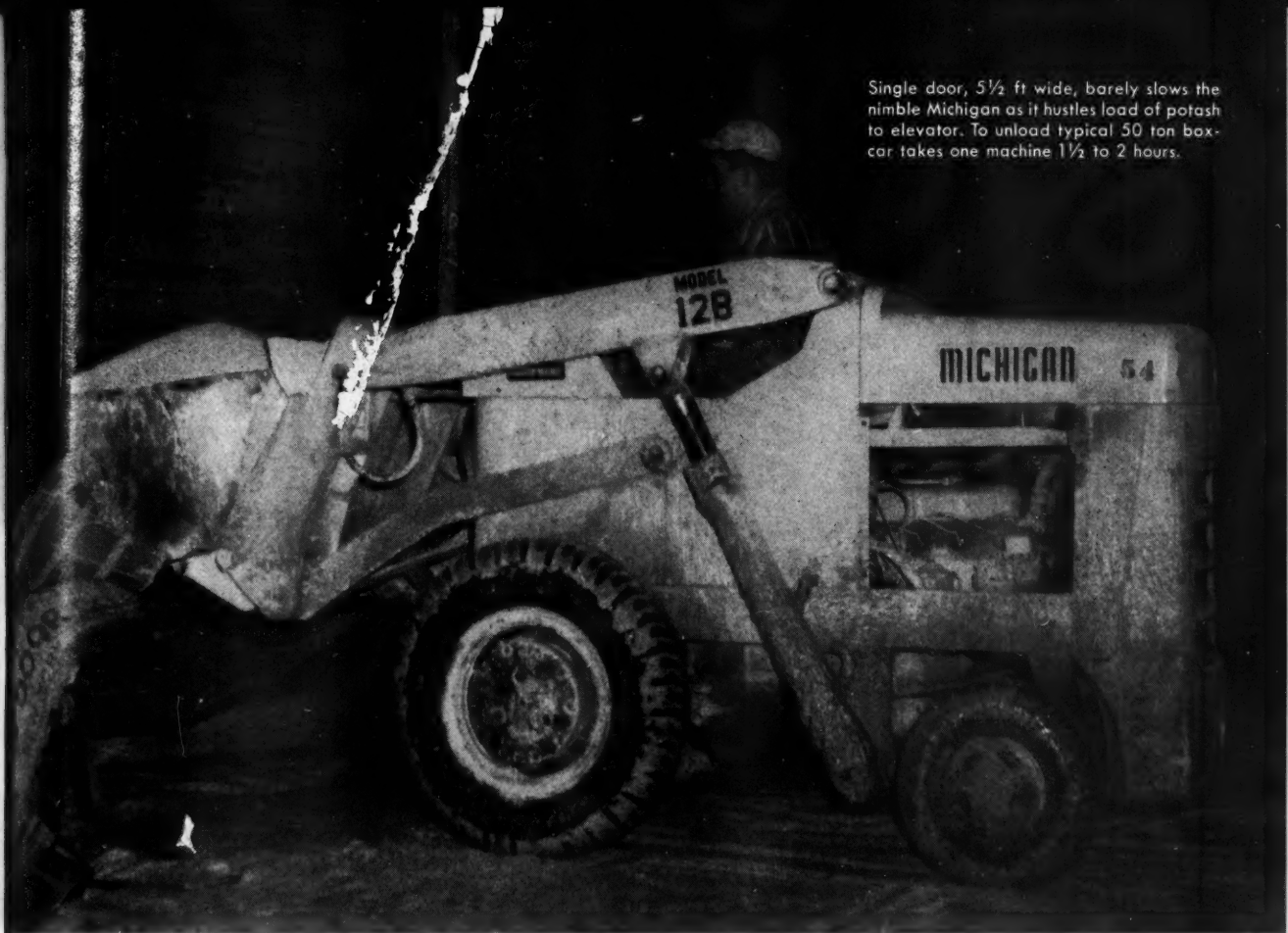
New 60% Standard Muriate
New 60% Special Granular Muriate
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Sulphate of Potash
Chemical Muriate - 99.9% KCL minimum

Quick Service - High Quality
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Single door, 5½ ft wide, barely slows the nimble Michigan as it hustles load of potash to elevator. To unload typical 50 ton boxcar takes one machine 1½ to 2 hours.

Smith-Douglass production manager reports:

"Michigans easy to operate, easy to maintain"

"Ease of maintenance . . . fatigue-reducing power steer . . . complete sealing against dust . . . these are the main reasons we bought our Michigan Tractor Shovels."

The speaker is Monroe C. Suderman, production manager of the Streator (Illinois) plant of Smith-Douglass Company Inc, Norfolk, Virginia.

Unload 50 ton boxcar in 1½ hours

One of this firm's *many* Michigan-equipped plants, the Streator operation uses their Michigans for a variety of material-handling assignments. Their Model 12B's—units with 3000 lb lift capacities and 16 cu ft buckets—spend about half their time moving potash, sulphate of ammonia, and triple super-phosphate from boxcars to elevators. Where travel distances are average (20

to 60 ft one-way) and car-loads typical (most materials are ordered in 50 ton lots), one Model 12B does a complete unloading job in 1½ to 2 hours. Bucket loads scale out at 800 to 1,000 lbs each.

Feed 25 tons TSP hourly

Another major 12B job involves feeding super-phosphate from storage piles to elevator. Unit output here, on one-way hauls of 25 to 250 ft, averages 25 tons per hour—all the plant can handle.

Handle cleanup too

The 44 hp Model 12B's keep busy elsewhere too in this fully-integrated, 260-man operation. Sometimes they deliver some of the 17 grades of finished products to packaging (from where it is shipped by bag and bulk to farm supply dealers throughout Illinois, Indiana, Iowa, and southern Wisconsin). Sometimes they clean

around elevators. They haul re-work material. Push snow. Etc. Etc.

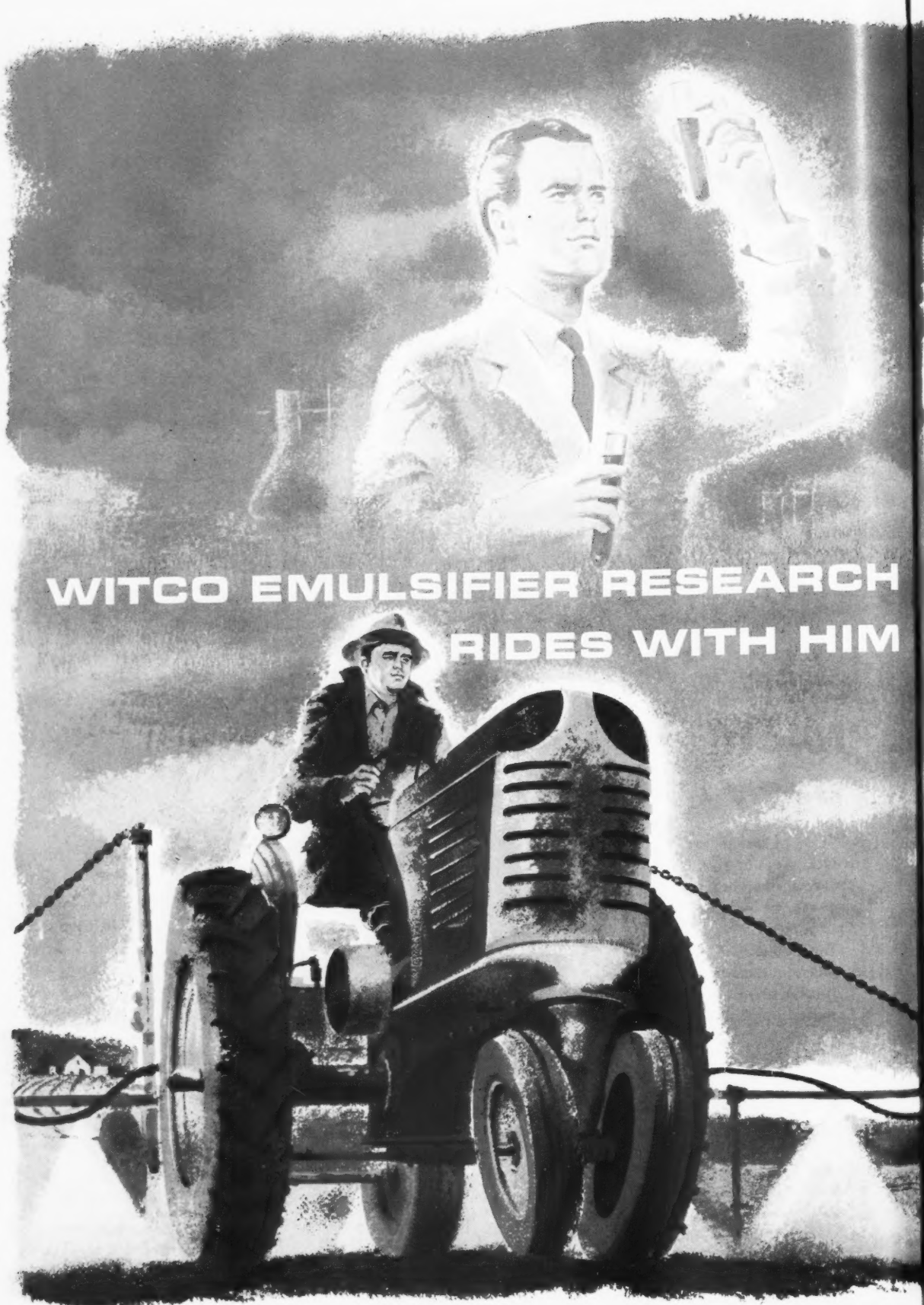
Versatility like this—*plus dependability*—are two of Michigan's *biggest advantages*. We'd like to show you, firsthand, how they can pay off *in your plant*. Choose from nine models, whatever size bucket you want (9 cubic feet to 10 cubic yards)—your Michigan Distributor will demonstrate. Call him to arrange time and place.

Michigan is a registered trademark of
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**WITCO EMULSIFIER RESEARCH
RIDES WITH HIM**

It's not yet Spring when Summer's work begins. Pre-emergence toxicants make possible an early start... a more profitable finish. And Witco research has created Witco Emcol Emulsifiers which perform outstandingly under the normal range of field temperatures. Formulators know how important this kind of performance is to sales.

Through the years, Witco research has made Emcol Emulsifiers increasingly attractive to formulators. Their excellent quality allows the use of reduced emulsifier levels. Their extreme versatility makes pos-

sible the use of but three Emcols to produce top-quality emulsifiable concentrates of a wide range of chlorinated hydrocarbon and organic phosphate toxicants. In addition, these emulsifiers produce concentrates which have excellent storage stability.

The many basic emulsifier patents held by Witco in more than 15 countries indicate the success of our research efforts in this ever-changing area of chemistry. Witco's technical service program makes available our extensive research facilities and highly trained specialists to help solve your formulating problems.

EMCOL	DESCRIPTION
H-300X	Emcol H-300X is balanced for toxicants in the lipophilic range (i.e., toxaphene and chlordane), while H-500X is ideal for more hydrophilic toxicants (i.e., DDT and BHC). Blends of this Emcol-matched pair produce superior emulsifiable concentrates with chlorinated hydrocarbon and organic phosphate insecticides.
H-500X	
H-710	Manufactured for use with 2,4-D and 2,4,5-T ester concentrates, at low levels, these products give low-foam concentrates outstanding emulsification and sludge-inhibiting properties.
H-712	
H-714	
H-140	Especially developed for use with Malathion, these Emcols may be blended with other Witco emulsifiers or used alone. H-140 produces excellent emulsifiable concentrates containing 5 pounds per gallon of Malathion (approx. 60% Malathion by weight).
H-141	Emcol H-141 is recommended where levels of 8 pounds per gallon (approx. 86% Malathion by weight) are desired.
H-A	These unique Emcols make practical simultaneous application of a wide variety of liquid fertilizers—liquid pesticide mixtures. Such mixtures may be field-blended to give exactly the correct proportions of toxicant and fertilizer as well as correct dosages for particular crops.
H-B	
H-C	



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MEMBER BUSINESS
PUBLICATIONS AUDIT

The national business magazine for the fertilizer and pesticide industries, **FARM CHEMICALS**, serves primarily those persons responsible for management, marketing and production. It has a qualified circulation for selected executive and supervisory persons within specified segments of these industries, as well as in certain closely allied fields. Subscription rates to all others are: in the U.S., its possessions, Canada, Cuba and Panama: \$6.00; in other countries: \$7.50. Current issue 50 cents. Back issues \$1.00. (Current issues become back copies on the 5th of the month following publication.) Established in 1894 as *The American Fertilizer*.

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THE COVER PICTURE

Are we aware of the "mess" that encompasses the farm credit situation? Bankers are exerting a more aggressive attitude to help meet the needs of a changing agriculture. Bank farm representative K. P. Williams, of The State Exchange Bank, Culver-Argos, Indiana, "signs up" a rural borrower after appraising and discussing the borrower's collateral and needs. **FARM CHEMICALS photo by Tom Ross Studio, Argos, Indiana.**

FARM CHEMICALS

DRI-SOL

ADVANCED, NEW NITROGEN SOLUTIONS

developed by Commercial Solvents Corporation



OF YOUR MIXED FERTILIZERS

It's a pleasure to tell you about the new, exclusive (patents pending) DRI-SOL Nitrogen Solutions. This new line represents a significant advancement in ammoniating solutions. In making mixed fertilizers, you will find the performance of these solutions quite impressive. You can count on at least 7 distinct benefits:

1. Reduced shipping costs. 2. Better process control in continuous ammoniation. 3. Lower formulation costs. 4. Lower drying costs, increased

dryer capacity, or a drier product. 5. Increased plant capacity. 6. Faster curing and quicker shipment. 7. Improved quality of both conventional and granular fertilizer.

In addition to these 7 advantages, you may find still other ways in which these unique DRI-SOL solutions can be useful to you. For example, these solutions can be used to help offset the high water content of lowstrength acid, or to produce those grades which are difficult or impossible to

make with conventional solutions. CSC's DRI-SOL Nitrogen Solutions are available in grades ranging from 24% ammonia and 76% ammonium nitrate to equal parts by weight of ammonia and ammonium nitrate. This new line of solutions is essentially anhydrous. Water content: about 0.5%.

DRI-SOL solutions are generally available in the Southern and Midwestern States. Technical literature available to fertilizer manufacturers.

AGRICULTURAL CHEMICALS DEPARTMENT

COMMERCIAL SOLVENTS CORPORATION **CSC**

260 Madison Avenue, New York 16, N. Y.

★ Please send me technical data on CSC's new DRI-SOL Nitrogen Solutions. The solutions numbers I am currently using are: _____

The bulk of my mixed goods tonnage is made up in the following grades: _____

NAME _____
TITLE _____
COMPANY _____
STREET _____
CITY _____ ZONE _____
STATE _____

WHAT'S DOING IN THE INDUSTRY

F
C

GENERAL CHEMICAL PLANS NEW PHOS. ACID PLANT

Plans to build a large, new phosphoric acid plant at the East St. Louis (Illinois) Works of Allied Chemical's General Chemical Div. were announced recently by Frank J. French, president.

The plant, with a projected capacity of 50,000 tons per year of wet process acid, is scheduled for production early in 1961. The acid will be used primarily by manufacturers of fertilizers for midwest agriculture.

CSC DOUBLES AUTHORIZED COMMON STOCK SHARES

At Commercial Solvents Corp.'s annual meeting on April 7, stockholders re-elected three directors, voted to double the company's authorized shares of common stock to 6,000,000, approved a revised pension plan for employees and heard CSC President Maynard C. Wheeler announce anticipated first quarter earnings of 40 cents per share.

Re-elected to the board were Harold W. Comfort, president of the Borden Co.; Austin S. Igleheart, retired former board chairman of General Foods Corp.; and Jeremiah Milbank, Jr., investment management.

Barring a general downturn in

the nation's economy, Wheeler said, Commercial Solvents anticipates earnings in the range of \$1.50 per share in 1960.

There are no immediate plans for issuing shares of the newly authorized stock, Wheeler said, nor are there any negotiations or discussions under way which would suggest issuance of any appreciable number of shares.

NATIONAL PHOSPHATE CORP. TO BUILD ACID PLANT

Erol Beker, president, reports that National Phosphate Corp. will build a large phosphoric acid plant at Marseilles, Illinois. Completion is scheduled for the end of the current year.

The plant site fronts on the Illinois River, and the plant will have its own deep water barge dock. National Phosphate Corp. will serve its customers by truck, rail and barge.

CORRESPONDENCE PEST CONTROL COURSES OFFERED

The third correspondence course in pest control will be available from Washington State University this month, reports H. S. Telford, chairman of the department of entomology.

The course, "Principles of Pest Control," is designed primarily for

pest control operators in urban and suburban communities. The syllabus, of 150 to 200 pages, ranges from classification of insects; pest control methods, chemicals and equipment; to public relations and pest control and the law.

The other two courses are in agricultural entomology. One is offered for three State University credits, and the other is a non credit course.

Persons interested in these courses should write to General Extension Service, Washington State University, Pullman.

NEW CALIF. PLANT GOES INTO PRODUCTION

Operations have begun at the new ammonium phosphate and wet process phosphoric acid plant of Valley Nitrogen Producers, Inc., at Helm, Calif. The plant has a capacity of about 75,000 tons per year of ammonium phosphate and complex fertilizers and 16,500 tons per year of P_2O_5 .

Engineering was performed by the J. C. Carlile Corp.

T. E. BRADLEY DIES

Death of Tobias E. Bradley on April 17th in Peoria, Ill., has been reported. Mr. Bradley joined Potash Co. of America in February, 1952, as Midwest sales manager and had occupied that position until his retirement in 1957. He had more recently been active in the company's affairs as a consultant.

McKENNA NAMED EXEC. V.P. OF NEW PESTICIDE FIRM

Joseph P. McKenna has accepted the post of executive vice president, Fine Grinding Corp., 241 E. Elm Street, Conshohocken, Pa.

The new firm began operations last month, specializing in the grinding and formulating of pesticides. This includes research and development of formulations calling for exacting specifications relative to wetting, particle size and suspensibility, the company reports.

Contracts for grinding pharmaceuticals, pigments and plastics also will be sought by McKenna and his associates.

Meeting Highlights

NEXT MONTH:

Manufacturing Chemists Association Annual Meeting

The Greenbrier, White Sulphur Springs, W. Va.

June 9-11: At the business session on Thursday, June 9, an address will be presented by H. E. Humphreys, chairman of the board, U. S. Rubber Company.

Secretary of Health, Education and Welfare Flemming is scheduled to address the annual banquet on Friday, June 10.

National Plant Food Institute Convention

The Greenbrier, White Sulphur Springs, W. Va.

June 12-15. Immediately following MCA's annual meeting, NPFI members will gather at The Greenbrier for their annual convention. At press time, details of the program were not available. Look for them in the June FC.

Association of Southern Feed and Fertilizer Control Officials 18th Annual Convention

The Riverside Hotel, Gallinburg, Tenn.

June 21-22. (June 20 for control officials only). Maurice B. Rowe, secretary-treasurer, reports that an excellent program has been planned.



"I'm a
bag that
gets knocked
around a
lot in my
business."



"Me, too. And I don't think I could stand it if Chase didn't know how to pick the paper!" Fact! Chase buys all these types of paper on the open market: stretchable, non-skid, creped or regular kraft...fully bleached, semi-bleached and colored outer sheets. This means Chase has the pick of the best from *many* sources. Result: Bags with maximum strength, minimum bulk, more value for you. You pay no more for the *best* bags, beautifully printed. Make sure you get them—from Chase!

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32 Plants and Sales Offices Coast to Coast

MULTIWALLS • TEXTILE • PLASTIC AND LAMINATED BAGS • CONSUMER-SIZE PAPER BAGS
AND OTHER PACKAGING MATERIALS

LETTERS

**F
C**

SUCCESSFUL SELLING

Portland, Ore.
We wish to compliment you on the article "Demonstrate with Showmanship" by Ted Pollock in the April issue of FARM CHEMICALS.

Would we be able to get a reprint of say 20 of these as I would like to supply them to our sales force. The article is very timely and true. We would be happy to pay whatever charge there may be. Thank you.

Very truly yours,
KEITH SIME
Sales Manager
MILLER PRODUCTS CO.

Kansas City, Mo.
I think your articles on "Successful Selling" were excellent and I would like to receive a copy of all twelve articles.

If there is a charge, please invoice Consumers Cooperative Association . . .

Sincerely,
A. H. STEPHENSON
Director, Fertilizer Div.
CONSUMERS COOP. ASSN.

New York City
We very much enjoyed the article "Beat the Competition . . . with Service" in your February, 1960 issue, on page 22.

Our plan is to send this article to the overseas Veterinary Sales Offices of

Squibb-Mathieson. Would you have 200 reprints of this article? . . .

Sincerely yours,
GORDON D. RAPP
WILDRICK & MILLER INC.

Dallas, Texas
Please send us one copy each of your reprints entitled "Successful Selling Series."

Yours very truly,
C. MARTIN
UNITED INTERSTATE
CHEMICAL CORP.

Kansas City, Mo.
We should very much like to have, when available, a complete reprint series of the marketing articles that have been running in FARM CHEMICALS recently, and of which the twelfth article is included in the April, 1960, issue.

If such reprints would be available, we should appreciate your sending us six copies of each article.

In addition, the thought has entered my mind that it would be splendid for each of our salesmen to receive FARM CHEMICALS magazine as it is issued . . .

Very truly yours,
C. A. PATTERSON, JR.
Secretary-Treasurer
PATTERSON CHEMICAL CO., INC.

Thank you for inquiry and interest in our magazine; the reprints are being forwarded to you.

We concur with your thinking that each of your salesmen should receive his own copy of FARM CHEMICALS. However, we can only include your salesmen upon receipt of their subscriptions since our qualified circulation is limited to executive and supervisory persons.

ROUND TABLE PROCEEDINGS

Milan, Italy
We should be obliged if you would advise us how we can lodge a request for the full text of the papers presented at the Fertilizer Industry Round Table Meeting, at the Mayflower Hotel, Washington, D. C., on November 4-6, 1959, as mentioned in the December 1959 issue of your journal . . .

Yours very truly,
SOCIETA EDISON

You may lodge your request by writing to Dr. V. Sauchelli, National Plant Food Institute, 1700 K Street, N. W., Washington 6, D. C.

MARKETING INFO. WANTED

Omaha, Nebraska
I have just recently subscribed to FARM CHEMICALS magazine and thoroughly enjoy the articles which you have presented in the last two months on marketing. I would appreciate receiving fifteen copies of the articles beginning on the following pages.

January—pages 14, 18, 23, 24.
February—pages 18, 22, 26, 30.
March—Pages 18, 22, 28, 35.

I would also like to receive copies of any articles on marketing which you pre-

sented prior to your January 1960 issue. I would also like to know of any books on marketing which you could recommend.

Very truly yours,
H. M. DAY
Technical Sales Manager
STAUFFER CHEMICAL CO.

UP-TO-DATE WITH FC

Dear Sirs:
St. Louis, Mo.

If you see fit I would greatly appreciate being on your mailing list to receive your fine magazine "Farm Chemicals."

I find it keeps me up-to-date in this growing field.

Yours very truly,
J. D. CAMPBELL
Project Manager
Organic Chemicals Div.
MONSANTO CHEMICAL CO.

Washington, D. C.
I have just seen the April issue. As always, you did a beautiful job of presenting what The Sulphur Institute plans to do. We sincerely appreciate your interest and, as you know, will be glad to cooperate in every way possible . . .

Sincerely,
MOYLE S. WILLIAMS
Chief Economist
THE SULPHUR INSTITUTE

NEW DICTIONARY NEEDED

National Stock Yds., Ill.
I have a copy of your Dictionary of Fertilizer Materials and Terms which is the 1952 edition.

The book has had hard usage and has become quite worn.

If possible, I sure would appreciate receiving three or four copies of this Dictionary, or if one has been printed since this date that would be fine.

I would appreciate hearing from you.

Yours very truly,
W. B. SOMERS
Assistant Manager
AGRICO

Copies of the new dictionary, now titled "Dictionary of Plant Foods," are on their way to you. Written by Arnon L. Mehring and published by FARM CHEMICALS, it is available to readers at \$1.50 per copy.

Chicago, Ill.
I'm trying to complete a file of articles written about liquid fertilizers. I see by your index for 1959 that you ran items in your April and January issues. Would tearsheets be available? . . .

FRANK C. BYRNES
Sales Promotion Manager
STEPAN CHEMICAL CO.

Joliet, Ill.
We would like to obtain reprints or tear sheets of "Using Wet Process Phosphoric Acid to Make Complete Liquids."

Very truly yours,
VIRGINIA CRONIN
Librarian
BLOCKSON CHEMICAL CO.

FARM CHEMICALS

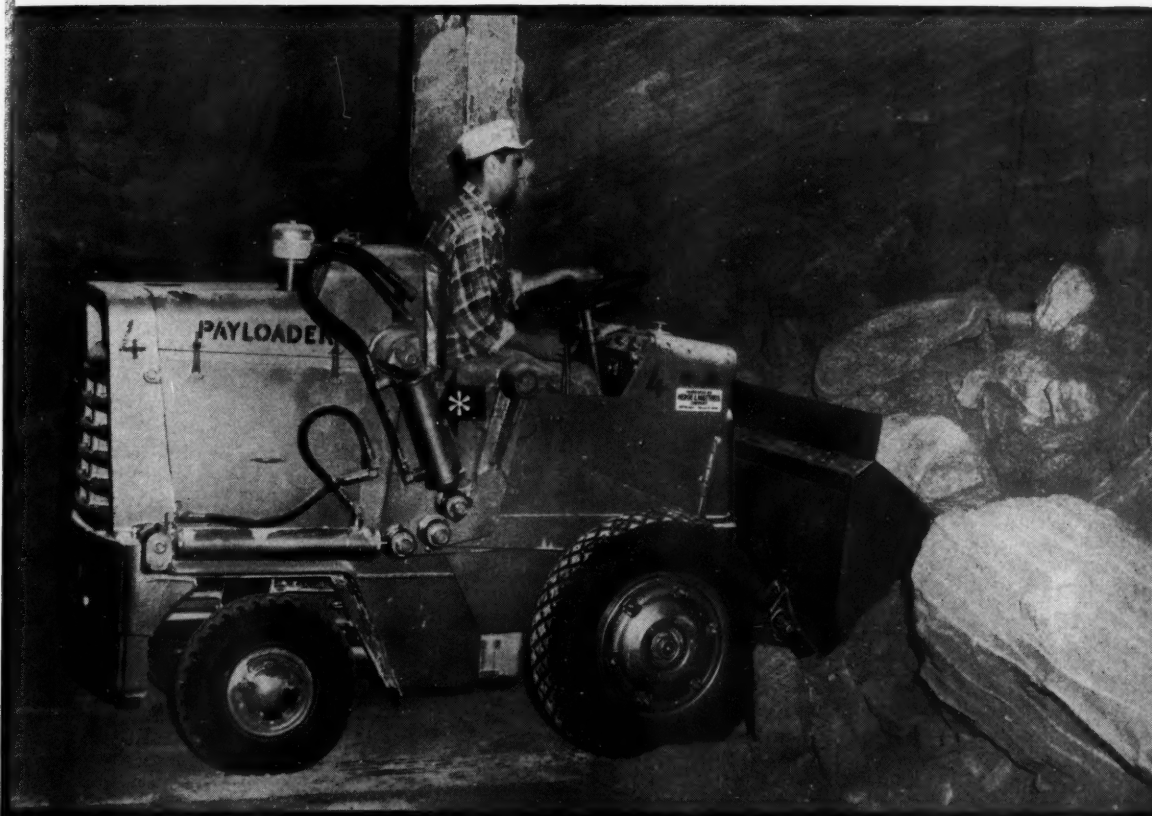


ALL MIXED UP ABOUT CANCER?

You needn't be. Today many cancers are curable. Your best insurance against cancer is a health checkup every year. And send a check to the American Cancer Society to help wipe out this dread disease. Send your contributions to "Cancer," in care of your local post office.

AMERICAN CANCER SOCIETY

PAYLOADER® is more productive



more digging and breakout power

Unusual digging power is only one feature of the H-25 that makes it the most productive tractor-shovel in its size range. Following are some of the other features and basic reasons why the H-25 "PAYLOADER" is outstanding in its class:

Full Power-shift Transmission with two speed ranges forward and two speed ranges reverse, plus matched, single-stage, two-phase torque converter.

Power-steering and the smallest turning radius (only 6 ft.) in its class.

Power-transfer Differential giving more reliable traction on slippery conditions by reducing drive-wheel spin-out.

Protected for Long Life by the most complete system of built-in insurance: oil filters; triple air cleaners; sealed hydraulic service brakes and enclosed parking brake; closed pressure-controlled hydraulic systems; oil and grease seals; other protective devices.

Whether your bulk-handling needs require the Model H-25 with 2,500 lbs. operating capacity, or larger tractor-shovels — up to 12,000 lbs. operating capacity — you'll find a "PAYLOADER" is the standard of any comparison. Your Hough Distributor is ready to prove it, and has the finest service and parts facilities in the business, backed by Hough factory service personnel.

✱ Two extra-large hydraulic cylinders develop the tremendous bucket breakout, tip-back force of 4,500 lbs. at the cutting edge — more than is available on any other machine in its size range.

HOUGH®



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SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
704 Sunnyside Ave., Libertyville, Ill.

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5-A-4

► *Government-sponsored mass-spraying of insecticides has a go-ahead sign.*

► *Rising farmer resistance to usual sales methods is expected, experts predict.*

Industries selling the farm market are heading toward a prolonged buyer's market generally. Expert opinion here is that they can expect rising farmer resistance to usual sales methods. Primary reason is the low income of 1959 coupled with prospects for little if any improvement over the next few years. It means farmers will be extra careful in their purchasing plans. While this general rule applies primarily to machinery and equipment sales, it is likely to have an effect as well on fertilizer and chemicals sales to a lesser degree. In the latter case, it means further concentration of buying power in fewer hands—acceleration of the trend of recent years. Smaller farmers will buy less and gradually move out of the picture, while larger farms will get progressively larger with greater buying power.

Lending further weakness to chemical sales is the general uncertainty over the chemical residue issue. Effects of recent government actions are still being felt and are likely to linger at least through this year.

Current period of farmer adjustment to lower income and to uncertainty over residues is looked on here as temporary. Expansion of efficient farm managers to bigger land holdings will speed up in the early 1960's. As the farm size is increased to the maximum efficient size, demand for fertilizer and chemicals once again is expected to ride a rising curve—but only after the current adjustment period.

An eye on farm real estate values and a hand OFF the panic button will be the rule in the months ahead. Farm real estate values are heading down. The farmland boom ended abruptly last fall and prices in the Midwest and other areas this spring have fallen somewhat. Current farm real estate situation is not a levelling-off, but the beginning of a decline, according to experts here.

Credit and real estate professionals look for a "moderate" decline in land prices—10-15% down, spread over several years. A sharper, more rapid decline in view of highly inflated land values is *not* expected—primarily on the expectation that more efficient commercial farmers will buy up more land to expand their holdings to efficient proportions, thus cushioning the over-all decline. The experts do not believe the land value decline signals a general collapse of the farm economy—just more, and needed, "adjustment."

Don't look to off-farm income of farmers as a big untapped well of funds eligible for spending on farm production items. Recent reports indicate that there

are billions of dollars brought to the farm from town jobs forming a bigger-than-publicized source of farm spending. Actually, money farmers make on the side, from other jobs, goes first to maintain or increase the farm family living standards. What's left over, if any, then may go into purchase of production items. Farm spending for fertilizer and chemicals still comes from the approximate 32 billion dollars gross income made directly from the farming operation. This gross has changed little in the past few years.

Grower indemnity in last fall's cranberry fiasco puts the government on record as admitting it had at least partial responsibility in the development. The White House announced the government would pay growers 10 million dollars to defray part of the loss suffered. Payment is supposed to go to growers who used the chemical in question legally.

The decision to pay the indemnity further commits the government to a greater effort to prevent a repeat of the cranberry crisis. Indications are that it will attempt to work more closely with the chemical industry, and especially growers. No bureaucrat wants to be tagged for dumping millions of tax dollars down the drain.

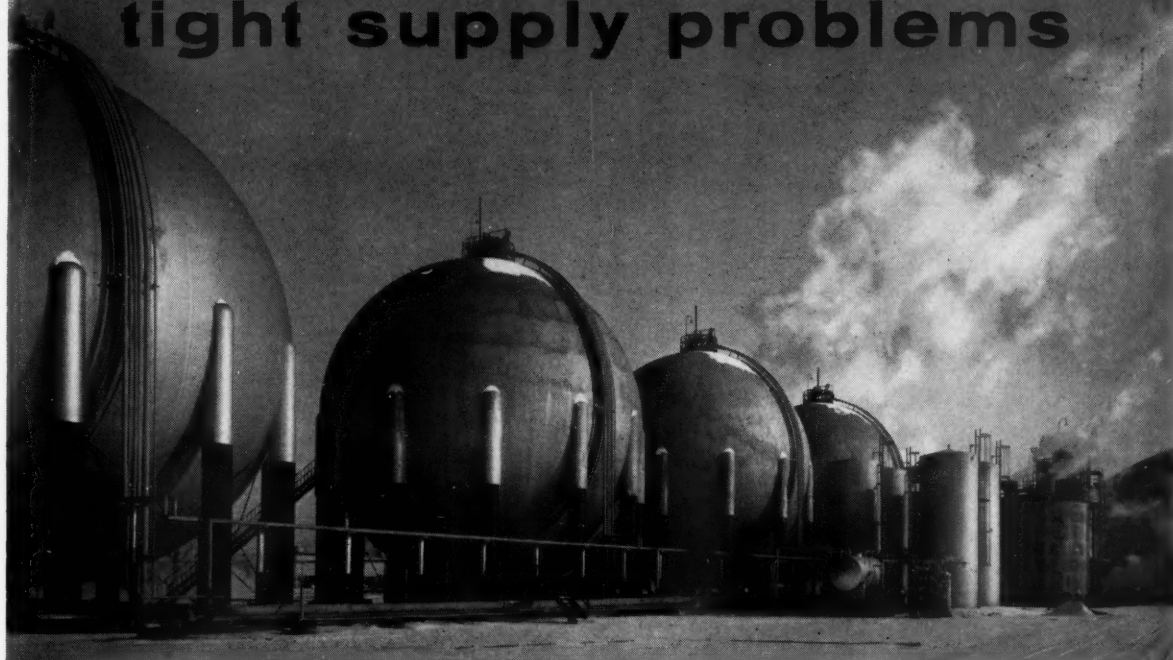
Government-sponsored mass-spraying of insecticides now has an indisputable go-ahead sign. It comes in the form of a refusal by the U.S. Supreme Court to hear a petition from the decision a couple years ago by the Brooklyn District Court. The District Court held, in the gypsy moth case, that the government did not infringe on citizen rights in its spraying operation. The High Court's refusal to hear the appeal amounts to a decision in favor of the government spray programs.

Conservation Reserve of the Soil Bank signed up 6.3 million acres starting in 1960, in addition to 22.1 million acres signed in previous years. That brings the total land temporarily removed from production to 28.4 million acres. The current sign-up is about 1 million acres more than the Agriculture Department anticipated. Reason for the increase is that average rental payment per acre is 60¢ lower than estimates, at \$12.90—freeing that much more to rent additional land.

Fate of the CR in Congress will be settled in the next few weeks. Leaders in Congress talk of ending sign-ups this year, although the political pressures in favor of "benefit" bills such as the CR may prevent it.

(Continued on page 12)

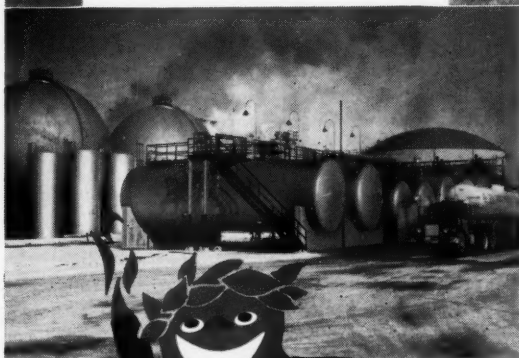
SERVICE FROM SOHIO takes the pressure off tight supply problems



Sohio's storage facilities — largest in the country in relation to production capacity — keep nitrogen materials on tap for your peak season needs.

• • •

Sohio pioneered, and now sets new standards for speedy truck delivery of nitrogen materials.



17-60

MAY, 1960

WHEN you order nitrogen materials you naturally expect quick-time service and delivery. And that's just where Sohio shines.

Sohio's storage facilities — a continually expanding array of storage spheres, tanks and warehouses — provide an adequate inventory of nitrogen materials to meet your rush-season demands. Like clockwork, Sohio materials move out on the 5 rail lines serving the Sohio plant at Lima. Truck fleet delivery, developed by Sohio, gives you the fastest delivery possible.

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What's Coming Next Month

We all have at one time or another wished for a better way to solve some of the trying situations that come up in our everyday activities. Sometimes a good "bull session" with other industry members can eliminate the problems or least lessen the concern created.

In order to discuss the trends, objectives, and problems of the fertilizer industry, a major supplier has created a rotating advisory panel so that it could better . . .

■ SERVE THE INDUSTRY

Twelve men representing a cross-section of management in the fertilizer manufacturing industry were asked to participate in a fertilizer critique. You're probably wondering what problems were discussed. The panel and the problems with which it becomes concerned will be highlighted in an interesting story next month.

■ EASE THE CREDIT STRAIN

Some tough problems have to be faced by the fertilizer industry. It is in a period of readjustment that some definite financial pressure is created. What can be done about it? Next month, F. E. Hartzler, a small business consultant will suggest a method to "ease the strain."

■ 10 OBSTACLES TO PROGRESS

Pressures are confined not only to financial matters but to other areas as well. The capacity to consume has lagged far behind our abilities to produce. "Don" Lazo, the author of "Be a Constructive Critic" (Jan. '60 FC) presents 10 obstacles to scientific marketing, which if considered could help to increase our capacity to consume.

. . . in the new

FARM BPA CHEMICALS

WASHINGTON VIEWPOINT

Good news for your fertilizer and chemicals dealers: Congress this session is expected to pass a bill which will permit self-employed small businessmen to set up pension plans for themselves. Until now this has not been practical because of the way tax laws were written.

A bill sponsored by New York Rep. Keogh now has the blessing of the Treasury Department (after extensive revision) and thus is expected to be approved by the White House.

Briefly, the details: Any self-employed person (dealers, farmers, doctors, etc.) would be permitted to set aside a certain amount of money each year and invest it in an annuity or other pension program. The limit would be 10% of annual income not to exceed \$2500 in any year. No income tax would be levied on this money, but upon retirement and withdrawal of the funds, the lower capital gains tax would be levied. This is an attempt to provide a climate for self-employed persons similar to that enjoyed by employees of corporations.

But employees of self-employed persons would have to be treated on the same basis. That is, the employer would have to set aside a percentage of employees' pay equal to the percentage he puts aside for himself. Part-time employees would not be covered.

Food & Drug Administration aims another blow at penicillin. It is preparing to put out another regulation covering possible residues in the milk supply. The new rule will require manufacturers to attach a label warning on packages containing penicillin and other antibiotics for injection into dairy cows. The label will warn farmers to withhold from human consumption all milk from treated cows for a specified period of time.

FDA suspects that penicillin injected into dairy cows is excreted in the milk and gets into the marketed product. It's a new tack, since until now FDA has blamed the presence of penicillin in milk exclusively on the mis-use of penicillin-containing mastitis ointments.

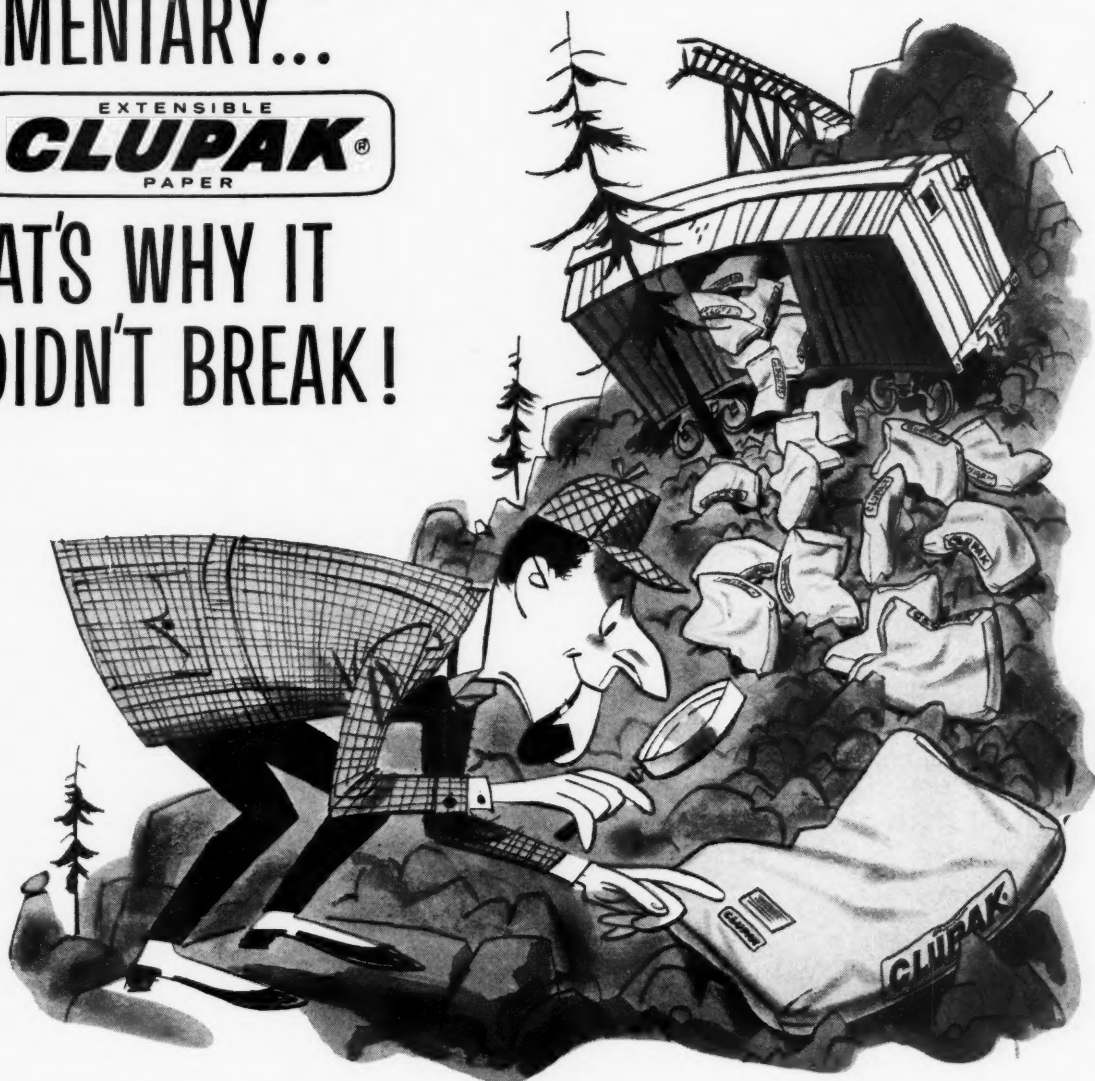
Odds continue to favor enactment of a wheat bill this year, although it's by no means certain. Chances received a big boost recently when the President let it be known he would "accept" a bill which would increase price supports slightly and sharply reduce the 55 million-acre allotment. This generally fits the description of a bill sponsored by Senate Agriculture Committee Chairman Ellender, and would seem to provide a tremendous boost for a compromise.

But—Secretary Benson said he could not accept an increase in price support. This indicates that the President will over-ride Benson's wishes in the event Congress comes up with a bill along lines outlined. The President's indicated intention to compromise stems directly from political pressures. Wheat State senators and congressmen facing re-election have told him that a wheat bill is almost essential to stem the tide of farmer resentment over the Benson farm policies. ▲

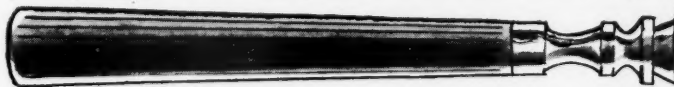
ELEMENTARY...



THAT'S WHY IT DIDN'T BREAK!

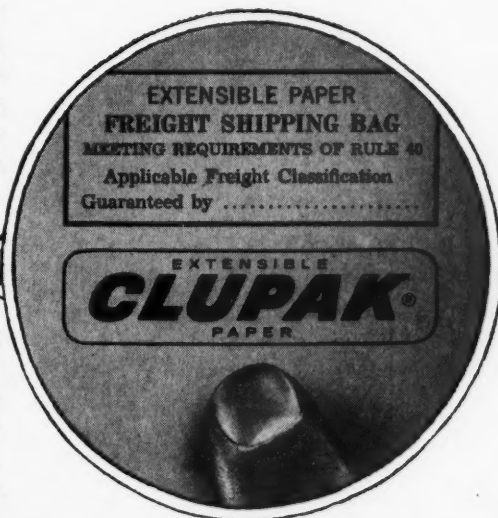


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Sell to the **Dominant Buying Motive**

By O. C. MERRETT

IN SELLING, DBM means many things. Dominant Buying Motive is just one of them. Others are "Do Buy Me" or "Don't Buy Me." And another, even more important meaning for "DBM" is "Do Benefit Me."

It's basic to say that every buyer is looking for a benefit. And the perfect selling situation would be when a buyer is nice enough to say, "Here is the benefit I want."

Let's assume you have a really cooperative farmer. He's so helpful he's going to tell you what his Dominant Buying Motive is. But he may be hurting rather than helping your sale.

Why? Because many customers don't even know their Dominant Buying Motive. They think they do, but the job of a really alert salesman is to find the *real Dominant Buying Motive*, even if it's not the same one the customer offered.

Let's take the illustration of the college boy who wants his Dad to buy him a car. To persuade his father to let go of the hundreds of dollars involved, he tells him that he'll get better marks if he has a car because he can get to classes on time. Or he might tell him that with a car he'll get a good job during the summer.

These are his expressed buying motives. But are they the real ones? No! The car salesman who shows him a used convertible and says, "The coeds at your college will fight to get into this car" has really uncovered the true Dominant Buying Motive . . . and, he's made the sale.

What's the answer? The real Dominant Buying Motive is not what a farmer wants . . . *it's what he wants it for.*

The rule is simple to apply. When a farmer says he wants a better yield per acre, this sounds like his Dominant Buying Motive. But it's not. Let's follow the chain of reaction to see what the Dominant Buying Motive really is. Why does he want a bigger

yield per acre? Because this means a better profit.

But why does he want a better profit? Because this means he can live better, get more things, and above all *be the most successful farmer in his area.*

Underneath every buying motive is the basic desire for recognition coupled with a desire to do better. Let's assume that you offered the farmer a chance to do better, to make more money, but you specified that he couldn't tell anybody in any way that he was a success. It would have to be kept a secret and to keep this secret you specify that, even if he makes more money, he can't spend it on any new luxuries because then he would be giving away the secret.

How would the farmer react? He'd be against it. Why? Because making a bigger profit, making more money, being more successful is a benefit only if he can use it, brag about it, and elevate himself in the eyes of his friends, and especially his competitors.

PROVE IT TO YOURSELF

Sound like a theory? Not a bit. It's a principle taught by Merrett-Adams Training Institute in its modern concept of salesmanship, and it works! You can prove it to yourself just as our instructors prove this theory to those who participate in their special sales training program, just as they did when they designed a special sales technique for one of the larger southern chemical companies to increase fertilizer sales.

Take a piece of paper and write down your needs. Make a full list of everything you think you *need*, but make certain you really need the items. Then take another piece of paper, and this time write down *what you want!* Everything you want to make your life really complete.

If you've been honest with yourself, you'll find that your *wants will outnumber your needs at least four to one!*

And here's the key to where many salesmen make their mistake in looking for the Dominant Buying Motive. They keep looking for man's needs, when

The first article in FARM CHEMICALS' new "Salesense" series points up the importance of finding your customer's true Dominant Buying Motive.

The real DBM is not what a farmer wants . . . it's what he wants it for.

actually the Dominant Buying Motive is discovered from his wants.

How are you going to find the Dominant Buying Motive—particularly since you know that, even when asked, a farmer frequently won't be able to tell you himself?

FIRST COMES 'PRE-APPROACH'

You are going to use two procedures. First, find out everything you can about this particular farmer: How long he's been farming, his background, his education, his technique of farming, comments he's made about farming innovations and crop techniques, what he wants out of life, what his ambitions really are, and hosts of other facts that will give you a picture of this man before you meet him.

Sounds like an impossible human inventory? Not at all. You can get this information in many instances just by asking questions of people who know him. Farmers know a great deal about each other and just a few minutes of discreet conversation with one farmer will give you a perfect picture of the farmer you are going to call on.

ASK QUESTIONS . . . AND LISTEN

But this doesn't mean that you're not going to make a call on the farmer until you get this information. In many cases, you won't have a chance to do a thorough job of *pre-approach*. What do you do then? You let the farmer tell you all about himself. That's right, let him give you the information. Your job is to *ask questions* . . . and to listen! And don't waste your time and his by asking questions and not listening intently to the answer!

You'll find the key to the Dominant Buying Motive will be in the answers he gives to what he thinks are just casual questions. And in many cases the answers you get will actually prove that the Dominant Buying Motive your pre-approach research indicated was not the right one.

Here's an example as related by Rodney, a salesman

of a firm engaged in selling chemical fertilizer.

"I did a real pre-approach research on my farmer prospect," Rodney told the instructor, "and I thought I had discovered his real Dominant Buying Motive. His friends, including his banker, told me that what this farmer really wanted was to get enough extra money to buy the 200 acres that lay next to his farm."

"Well," Rodney said, "I knew I had it made. All I had to do was to show him how the extra money he would make from using our fertilizer would help him realize his desire to buy the additional acres he had always wanted."

DO YOU HAVE THE RIGHT DBM?

Rodney paused for a moment, and then looked at the instructor. "I guess you know the answer, don't you," he asked. "You've always told us, when we think we have the Dominant Buying Motive, to check and make sure it's really the right one. But I didn't."

"What happened?"

Rodney grinned. "Luckily I found out in time. Here's how the selling conversation went. I said, 'Mr. Farmer, if there was a way for you to increase your yield per acre, you'd want to know about it, wouldn't you?'"

"I might," the farmer said cagily.

"How many acres do you have under cultivation?" I asked.

"200," the farmer replied.

"All in corn?"

"Yep."

"What kind of fertilizer are you using now?", I asked.

"XXX."

"And how much yield are you averaging per acre?"

"About 65 bushels."

"Have you had your soil tested?"

"No."

"If you could increase that yield you'd be able to buy the adjoining 200 acres you are considering,



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Some people hold that "potash is potash," "triple is triple" and "rock is rock" — that fertilizer ingredients are the same regardless of source. We don't agree. We think it is reasonable to expect a *better* product from the supplier who has a penchant for quality control and effi-

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| <input checked="" type="checkbox"/> Dealer Meeting Assistance | <input checked="" type="checkbox"/> Credit & Collection Assistance |
| <input checked="" type="checkbox"/> Farmer Meeting Assistance | <input checked="" type="checkbox"/> Salesmen Training Programs |
| <input checked="" type="checkbox"/> Advertising-Promotion Help | <input checked="" type="checkbox"/> Complete Line of Fertilizer Materials |
| <input checked="" type="checkbox"/> Technical Service | <input checked="" type="checkbox"/> Transportation Service |
| Formulation help | Routing |
| Product development | Freight rates |
| Process development | Plant location studies |
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| Plant organization | Technical assistance |
| Plant design | Negotiations with carriers |
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Dominant Buying Motive

wouldn't you?" I asked, reaching for what I thought was his Dominant Buying Motive.

The farmer looked at me with surprise and suspicion. "Why," he asked, "would I want to buy that 200 acres? I've got all the land I want."

Rodney was taken aback. "Well, if we could increase your yield at less cost," he asked, "what would you do with the extra money?"

"I guess every farmer wants more yield at less cost," the farmer replied.

"But if you had that extra yield, what's the one thing above all that you'd like to do with the money?"

The farmer scratched his chin for a moment. Then he grinned a sheepish grin. "I've got a wife and two daughters who have always had a hankering to go to Europe," he said, "and I guess if we ever got that far ahead I'd save the money for that."

THE MOTIVE IS FOUND

Now Rodney had the real Dominant Buying Motive. Not how much more money the farmer could make, BUT WHAT HE WOULD DO WITH THAT MONEY WHEN HE MADE IT!

"That's fine," Rodney said with assurance. "Now let me show you how using this fertilizer will help you get that trip to Europe with your family. You've got 200 acres of corn and your yield is about 65 bushels per acre, isn't it?"

"That's right," said the farmer.

"Now when you start to use our fertilizer," Rodney said, "your yield is going to jump to 100 bushels per acre, which means that you get 35 more bushels for every acre. With every one of your 200 acres adding 35 bushels to your yield, at a dollar per bushel, you'll wind up with an extra \$7,000. That's what you are losing now by not using our fertilizer. Would \$7,000 take your family on that European trip?"

The farmer grinned wryly. "Shucks, \$7,000 ought to take us around the world."

Rodney knew now that he had hit on the real Dominant Buying Motive and immediately capitalized on it. "That means, sir, that what's depriving your

family of that European trip is your not using our fertilizer. All you've got to do is start using our fertilizer, and you and your family can just about be on your way to Europe once the crop is in."

The farmer beamed, and then suddenly turned suspicious. "Your figures make sense," he said, "but how do I know that your fertilizer will bring that increased production?"

Rodney knew now that he had the sale made. The farmer had asked for proof! That meant that if he could prove his point, the farmer was going to buy. "Let me show you," Rodney began, and then the presentation was on its way to a firm final sale.

THE 'REASON BEHIND HIS WANT'

It all sums up to this. Don't always look for what the prospect wants for the final answer to the Dominant Buying Motive. Go one step further—look for the reason behind his want, and then you've discovered the Dominant Buying Motive.

Need further proof? Try this simple test on your wife. Let's say she's been asking for a mink coat. Tell her she can have it provided that she will only wear it in the house . . . she can't show it off to the neighbors and to her friends.

Will she make the deal? Of course not! She wants the mink so that she *can* show it off! She really doesn't want just the ownership of the mink coat. She wants the results of owning it . . . the chance to wear it in public . . . and to be admired while she wears it.

And remember when you are selling . . . that DBM doesn't alone mean the Dominant Buying Motive . . . "DBM" also means "Do Buy Me" and even more important "Do Benefit Me."

Remember, too, that last year thousands of farmers bought post hole diggers. Did they want post hole diggers? No! They wanted the holes, and if they could have got them without post hole diggers, not one post hole digger would have been sold. To sell a post hole digger, you've got to really sell the hole!

Ask questions. Listen to the answers. Ask yourself what the farmer really wants, and why. Ask him, ask his friends and neighbors. Then build your entire sales presentation around his Dominant Buying Motive. ▲



O. C. "June" Merrett, President of Merrett-Adams Training Institute, is well-known for his presentation of sales techniques. Mr. Merrett has spent many years developing and teaching courses in salesmanship and human relations. Merrett's talent, for training the "Key-man", has been used by a number of leading industries. Merrett was an experienced professional salesman before joining one of the largest adult educational groups in the country. He advanced from instructor to general manager, then later was one of the founders of the Merrett-Adams Training Institute. Next month "June" will discuss. . .

"Why do some men consistently sell more?"

Salesmen may look alike—talk alike—sell similar products to similar customers . . . yet records prove that less than 20% of these men sell nearly 80% of total products sold, and the rest have trouble selling enough to hold their jobs.

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Some formulations of ratios in higher analysis grades using DAVISON 16-48-0

Ratio Analysis	Pounds of Material Required			
	16-48-0	Ammo. Sul. (21%N)	Triple (46%APA)	Potash (60%K ₂ O)
1-1-1 14.4-14.4-14.4	602	917		481
1-2-2 11-22-22	917	349		734
1-4-2 8.5-34-17	1063		370	567
1-4-4 6.6-26.5-26.5	828		290	882

*Other higher analysis nitrogen materials (urea and ammonium nitrate) may be substituted in above formulations. Analysis in the more popular ratios, such as 12-12-12, 10-20-20, 6-24-12, 5-20-20, can be manufactured by the addition of granular dolomitic limestone or other materials.



Spraying lima beans for downy mildew.

PREDICTING PLANT DISEASE

By ARLEY HOVLAND



Weather station for lima bean downy mildew warning at the Leslie H. Rea farm near Erma, N. J., and key men in the project: John N. MacLeod, Cape May county agricultural agent, D. Russell Hyre, USDA pathologist, and Rea.

CONFUSION as to when to begin fungicide treatments and how often they should be repeated had farmers in Cape May county, New Jersey ready to throw in the towel. The struggle by growers to control downy mildew disease of lima beans was heroic, but practically worthless.

Then the county agricultural agent, a Rutgers University pathologist and a USDA pathologist entered the picture. The result: a weather forecasting system which predicted when the disease would strike and a spray program which wiped it out.

Lima beans for freezing are the most important vegetable crop in Cape May county. Downy mildew disease has caused serious economic losses to growers in certain years since the crop became established in the county in 1940.

Copper materials and other fungicides had been used with varying success, but prevention was very poor due to the inadequate methods of predicting when and how soon to apply fungicides and proper methods of application.

TROUBLE STARTED IN 1956

This was the situation in 1956 when George Mingin, former agricultural agent for the county, began to tackle the problem. Plans were made in cooperation with Dr. Spencer Davis, Rutgers extension specialist in plant pathology, and Dr. Russell Hyre, USDA pathologist, to determine, through collection of weather data in the county, when the disease might be expected to hit. One weather station with a hygrothermography and rain gauge was set up in the lower part of the county.

Little progress was made in the summer of 1957. Farmers suffered through one of the most serious droughts in many years. The crop was almost a complete failure, not due to downy mildew, but to lack of rainfall. Since growth and spread of the fungus

FARM CHEMICALS

depends largely on moisture conditions in addition to temperature, the disease never had a real chance to develop.

In July of 1958 the county was in the midst of its wettest season in 62 years—consistently wet. Due to the change in agents the weather station did not get into operation until July 10th—again in cooperation with the above pathologists.

On July 20th, 1958 the first outbreak of downy mildew occurred—almost turning the pods and tender leaves white overnight. From then on, the story of that season was one successive outbreak of mildew after another. Economic losses totalled well over \$200,000 to the county growers. Fields that had potentials of \$350 gross income yielded nothing or little in many cases.

The struggle by growers to control downy mildew losses was heroic but practically worthless. A new fungicide recommendation had been put out for maneb and growers used the only mass means of application they were accustomed to—airplane dusting. In spite of repeated applications of maneb dust by airplane, in some fields mildew continued to spread.

Finally, growers became despondent and many of them discontinued use of any material claiming that "just nothing seems to control downy mildew." This was the year of the acid test and in retrospect that fall several things became apparent:

(1) Maneb dust by airplane was just not giving adequate coverage to prevent outbreaks and spread of downy mildew. (2) Growers were still confused as to when to begin fungicide treatments and how often they should be repeated. (3) Information channeled from the county to Dr. Hyre in Newark, Delaware to Dr. Davis at Rutgers and back to the county agent was too late to get advance warnings to the growers. When it was apparent that an infection period occurred the mildew was already showing in the field.

A STRONG PROGRAM IN 1959

In the light of the serious set-back from downy mildew in 1958, an energetic and much stronger program was developed for the 1959 season. Meetings were held during the winter, with cooperation from a frozen food processor (Seabrook Farms), and under the tutelage of Dr. Spencer Davis, to explore all of the facets of what caused downy mildew and how best it could be controlled (from the standpoint of both fungicide material and application equipment).

Formula for predicting occurrence of disease based on rainfall and temperature data was completely explained to growers. Dr. Davis explained that it was foolish to think of mildew protection over a wide generalized area due to what he called "microclimatology" (the variance of humidity, rainfall and temperature factors over small areas). Growers were encouraged to purchase maximum-minimum thermometers and rainfall gauges for use on their own farms. Several farmers did so. It was determined that the method to use for mildew prediction from weather data was that mildew could be expected within 7 days after a total of 1.2 inches rainfall in a 10 day period and an average continuous 5 day temperature period of below 78 degrees F.

It was brought out to growers that research data supported the fact that maneb fungicide could prevent disease if applied in time and with correct coverage. It was also recommended that for most effective coverage, ground spraying equipment be used rather than airplane dusting, with ground dusting equipment being a second best application method.

Plans were made for a three station weather reporting system in the county in addition to what individual farmers would do on their own. One hygrothermograph from the USDA, a hygrothermograph purchased and donated by the Cape May county board of agriculture and an English instrument registering the relationship of humidity and temperature was the equipment used. In addition, rain gauges were used at all three stations. One station was set up in the lower part of county, one in middle and one in upper part.

A close watch was kept on the instruments and information was sent to Dr. Russell Hyre who in turn sent the information to Dr. Davis. However, to speed up predictions this agent kept running graphs from the data collected and put out mildew warnings immediately after the end of recorded infection periods.

THE SYSTEM WAS 'A REAL SUCCESS'

The forecasting system was a real success and farmers are much better prepared to combat mildew than they were before.

Initial infection period in 1959 began on July 17. Cards were sent out immediately to growers warning them to begin spraying. A radio warning was also issued.

At that time there was only one second hand mist blower sprayer in the county, but within a couple of days another farmer had purchased an airblast sprayer and began spraying. About the 27th of July another farmer purchased an airblast sprayer and began doing a large amount of custom work.

Where spraying was begun in time, hardly any mildew could be found. Where initial spraying was delayed some small amount of mildew was found in low spots. Downy mildew was found in one field on the 24th of July, just 7 days after prediction warning had been sent out.

From there on, spread of downy mildew became a little more general but tapered off in August due to dryer weather conditions. There was a short infection period in August and growers were warned again to begin spraying.

Fifty per cent of the growers did some spraying either on their own fields or by custom application. Some small amount of ground dusting was done, but practically no airplane dusting for mildew was contracted for this year. Success of this mildew program is a real tribute to county farmers when one realizes that they had to place complete confidence in their Extension Service and even change their basic thinking on airplane dusting vs. ground spraying.

With the ground work now surely laid for prevention of downy mildew—by reasonably accurate methods—growers can move ahead with confidence that downy mildew need not wipe out their profits. ▲

MARKETING

"THE CREDIT MESS"

*Both the fertilizer dealer
and the banker must make
some concessions in setting
up a sound credit policy*

"It is generally conceded that the financing of fertilizers and pesticides is in a mess. The fertilizer people blame the bankers and vice versa. Actually, I think neither is free from blame."

SO STATED an agricultural economist who was asked recently by FARM CHEMICALS to comment on what he thought about the present financing of fertilizers and pesticides.

What are the problems and how do we overcome them? Our economist states them pretty well:

► Bankers generally have been *over-conservative* in their lending policies for production purposes, including fertilizers. Their criterion in making loans has been the farmer's "ability to pay" or security—rather than the productivity of the loaned capital.

It can be argued, therefore, that the lending policies of banks have contributed to the misallocation of loaned funds. Farmers who already have plenty of capital can get more. Farmers with limited capital can get none.

But the capital could probably be used more productively (greatest return per dollar invested) by the farmer who is limited on capital.

► Fertilizer dealers have stepped in and served a useful function in extending credit to farmers for fertilizer use. Trouble is that in their zeal to make fertilizer sales, dealers have sometimes gone far beyond even a minimum of sound credit practices.

Credit has often been extended without checking credit ratings, financial statements or income statements—all of which are standard procedures in the banking business.

Fertilizer dealers argue that they can't do these things because, in the intensely competitive fertilizer business, the farmer will just "go across the road" and get his fertilizer and financing from another dealer.

As a result, it now seems that some fertilizer manufacturers and dealers are fed up with fertilizer financing and would willingly turn the whole thing back to the banks.

Others, however, do not consider financing a "burden" but look upon it as an integral (and profitable) part of the fertilizer business.

► Banks understandably like to handle the entire crop production financing of a farmer—not just financing for fertilizer. The bank does not want to be placed in the weak position of being a multiple creditor in case of crop failure or other financial crisis.

If the bank handles the entire production credit they can often "work the farmer out" of the difficulty.

FARM CHEMICALS queried the Agricultural Commission of The American Bankers Association on the matter of "some companies wanting to get out of the credit business." The answer was that they "hadn't heard about this in the fertilizer business."

"At times we hear complaints that farmers are unable to borrow," the spokesman said. "From our experience, these criticisms come from the inefficient operators and those who do not qualify for commercial credit.

"Banks today hold a record volume of agricultural credit. At mid-1959, this amounted to \$6.5 billion—the largest amount of all institutional lenders. The

bulk of these loans are for production purposes, and we have no specific information as to the amount loaned for fertilizer purchases."

PREFER "PACKAGE" TYPE LOANS

The spokesman echoed the statement of the agricultural economist referred to earlier in this article concerning "package" type loans. He said that more and more banks are extending a package type of credit rather than lending on a piecemeal basis.

"In other words, the commitment is made the early part of the year for the farmer's total credit requirements. The funds are dispensed in accordance with his needs, and the repayments are scheduled to coincide with periods of anticipated income," he added.

INCREASE IN INTEREST RATES

Although interest rates charged farmers by rural banks have not changed much if at all in the last year, many farmers may have to pay slightly more interest for short-term loans this spring, according to the February 1960 issue of Bankers Farm Bulletin, published by the Federal Reserve Bank of Atlanta (Sixth Federal Reserve District).

Farmers whose credit standing equals that of non-farm borrowers may get preference for loans when there are not enough funds for everyone, according to many Sixth District bankers.

Bankers who said they gave no preference when funds are short stated that the problem probably would not arise; some felt that farmers need not be given preference because they can get funds from non-bank sources such as Production Credit Associations.

In general, bankers in the district are optimistic about financing farm borrowers in 1960. They believe that commercial banks, farmers' cooperative agencies, and the Farmers Home Administration can collectively supply all the funds commercial farmers want this year.

Farmers' trade creditors—principally companies supplying fertilizer, feed, fuel and machinery—seemed to be thinking along the lines of short- and medium-term lenders.

Tradesmen in the district stated that they will grant the usual extended terms to their dealers or farm customers—typically 90 days or more at 6 to 8 per cent for fertilizer manufacturers.

THE PROBLEM IS EDUCATIONAL

Few fertilizer dealers will be able to handle the kind of credit needed in 1960. More dealer failures are caused by over extension of credit than any other factor. The problem of credit for the purchase of fertilizers and pesticides is one of working diligently to educate the bankers, dealers and farmers on a sound credit program.

With this as background, our agricultural economist offers the following suggestions to overcome the problems in financing of farm chemicals.

► If fertilizer dealers are interested in staying in the credit business they need to get their credit house in order. The industry needs to get together and set

up a code of conduct or some rules of ethics regarding financing. Intense competition is no excuse for wild financing. Banks have competition, too, yet they follow sound—and probably overly stringent—credit policies.

► If fertilizer dealers want banks to handle the financing they may have to make some concessions. If the basic loan to a farmer for fertilizer is unsound, the mere matter of changing the lending agency from dealer to banker isn't going to improve the quality of the loan. Banks aren't going to accept every farmer that some fertilizer dealers have accepted. Therefore, if financing is transferred back to banks, the fertilizer dealer may be faced with somewhat reduced sales.

► Solution to the problem probably lies in the direction of fertilizer dealers and bankers working closer together with farmers. Banks are increasingly coming to the opinion that they will have to offer more management and consulting services to farmers along with credit in order to compete with other credit sources. Perhaps this is a place where banks and fertilizer dealers could work together.

The bank could furnish credit, but the fertilizer dealer could provide the technical assistance of determining fertilizer quantities, timing, placement, etc. as a "package" deal along with the credit.

However, some bankers indicate that they are not interested in becoming a "collection agent" for fertilizer dealers. In other words, they are presently not willing to extend a farmer a line of production credit for the crop year and then "withhold" part of that sum to pay the fertilizer dealer—or even to let the dealer know when they have made an advance to a farmer.

Closer cooperation might break down some of these barriers. The fertilizer dealer would be relieved of his financing "burden," and the bankers would benefit by having fertilizer dealers turn over a few "customers" to them. The farmer would gain by obtaining his credit from a specialist in that field, yet would still have the technical consulting services of the fertilizer dealer.

► One idea that might be explored along these lines is an arrangement similar to that used in auto financing. Here car dealers often let banks handle the financing, but "underwrite" or guarantee the loan. It would be a very effective fertilizer sales approach to let the farmer know that "bank X will finance this purchase at Y%." Again, however, the dealer would have to make a concession—guaranteeing the loan.

Some minimum credit standards would certainly be encouraged in this case. A difficulty with the car-fertilizer analogy, however, relates to the quality of the chattel. A used car always has some salvage value; fertilizer once applied has none.

Next month, F. E. Hartzler, Small Business Consultant, Kansas State Teachers College, Emporia, Kansas, will tackle the problem of helping dealers secure the kind of credit they need from a bank or other type of lending institution. The article will be entitled: "The Cash Flow Chart—A Useful Tool." ▲

MERCHANDISING AIDS

PROMOTION

Write publicity that sells!

SOUND marketing calls for good public relations. And a vital part of "PR" is an effective publicity program.

WHAT'S NEWS? More than you may think. Have any of these things happened lately:

- ▶ Held a meeting? Dealer? Farmer? Sales?
- ▶ Hired new management personnel?
- ▶ Introduced a new product?
- ▶ Celebrated an anniversary?
- ▶ Launched an unusual campaign?
- ▶ Sponsored an unusual or interesting event?
- ▶ Unusual farming operation by a customer?
- ▶ New yield record by a farmer customer?

If you haven't made publicity a vital part of your public relations program remember: the power of the press is great. It encompasses the influence of both advertising pages and editorial columns.

Best way to get an editor down on you is to constantly remind him of how much advertising your company is running in his publication.

Recognition in the editorial columns must be earned—and it can be, through strict observance of the key elements:

- 1) Orientation toward the press and its interests.
- 2) Internal organization of your *own* interests.

So let's capitalize to the full on the sales potential of legitimate publicity.

First, let's briefly consider the basic job—the basic

Adapted from a talk by W. Alec Jordan, president, W. Alec Jordan Associates at meeting of Synthetic Organic Chemical Manufacturers Association of the United States, November 4, 1959, Hotel Roosevelt, New York, N. Y.

objective of any worthy editor. He has the primary responsibility, and only one—and that is to his readers—his audience.

Implicit in this "portrait of an editor" is his obligation not to waste his readers' time. But remember he's always interested in a story that may affect the community's prestige. He's concerned about making a *better community*.

Does he *really read* all the material that comes to his desk? Of course. For, somewhere, in that awesome pile may be one nugget of information which he—as a responsible editor—is obligated to relay to his readers. He does not know, and cannot divine, from what source or on what subject this might be. Therefore, and believe me, he reads them all.

Whether your message is in the form of a release, an article, or a personal conversation, be assured that it receives thoughtful, appraisive attention and consideration. This is his business, his job, his profession, his pride in himself, his future. . . and all of these things, incidentally, add up to the reasons that a worthy editor cannot be bought.

HOW TO GET YOUR STORY PUBLISHED

So the task is really quite simple. Provide the editor with worthwhile information for his readers and he will be glad to accord it appropriate editorial recognition. The editor benefits—you have given him good copy; the reader benefits—you have given him useful information, and you benefit. And that, by the way, is the definition of good business—a transaction in which all parties benefit.

How can you ensure editor orientation? Here are

FARM CHEMICALS



EASY TO FLY...EASY TO BUY
\$4,995 can put a brand new Ag-Cat
on your field ready to go

Ask your distributor about details on the special Grumman Finance Plan. A simple, easy plan that allows you—*through your own bank*—to start operating the best agricultural airplane for the least initial investment.

This is the airplane designed to make money for you whether you are a fleet owner or a one-plane operator. Extensive field evaluation and testing show that the 220 HP Ag-Cat will successfully compete with any agricultural airplane up to 450 HP.

The Grumman distributor in your area will arrange for your demonstration. The fact that you may already know just how good the Ag-Cat is won't stop the distributor from enthusing over it, feature by feature. Among the

many things, the distributor will tell you about the *certified* hopper load that's greater than any other aircraft of its type. You'll hear about the spray system. And the solids system. The oversized disk brakes. The interchangeability of upper and lower wing panels. The interchangeability of all four ailerons, too. And the cockpit area and seat belt are stressed for 40 G's . . . plus the fact that the same rugged, money-making Ag-Cat is now licensed for engines of 220 HP to 450 HP . . . and also that this airplane is a production item with *tooled construction*. Spare parts will never be a problem.

Great plane to fly, and so easy to buy. Get in touch with your distributor now who will give you all the details.

GRUMMAN

AIRCRAFT ENGINEERING CORPORATION

Bethpage • Long Island • New York



U.S. DISTRIBUTORS:

Magnolia Aviation Co.
Laurel Airport, Box 683
Laurel, Mississippi

Sun Valley Dusting Co.
P. O. Box 1671
San Benito, Texas

French Aviation Co.
1849 Airport Drive
Bakersfield, California

Mid Continent Aerial
Sprayers & Dusters, Inc.
Hayti, Missouri

MERCHANDISING AIDS

PROMOTION

Write **publicity** that sells!

(Continued from page 24)

a few simple rules. They are so easy to say, but, believe me, our studies have established that they are violated more than 90 per cent of the time.

The first is this: Know your publications and send them only material which is of some editorial value to the readers of that publication.

It is, of course, well nigh impossible for anyone to keep all these specifications in mind. So here's a system which you might choose to adopt.

Regard publications as being your "customers", as it were. So, just as sales managers keep files on their customers, have extensive files on all the publications which are of interest to you. Profile and "skeletonize" them on file cards. That's one aspect of editorial orientation.

Rule 2: Keep your releases to a reasonable length—long enough to say what needs to be said—and no longer. There seems to be an occupational malady among release writers—write on and on and dilute the essential with irrelevancies which merely clutter up the data.

Rule 3: Make sure you are saying something worthwhile—don't try to synthesize news. Editors, believe me, aren't gullible. It is only the dishonest man, or the short-sighted one, who tries to deceive an editor.

Rule 4: Shun, at all cost, the use of lush adjectives. Few new products are outstanding, marvelous, exceptional, unique, excellent, sensational and so forth. It's a good practice to read the first draft of a

release and cut out half the adjectives and superlatives; then read it again and get rid of the other half.

Rule 5: Above all, write for the editor and NOT your company or your company people. This is one of the most prevalent sins. It shows to all editors—they can spot a patsy release at a hundred yards. It shatters his regard for you and your company.

Here are a few scintillating examples of pieces which were obviously written to impress the boss—none of which ever saw print:

"The Jones Company of 714 Smith St., Los Angeles has a reputation for getting things done. Recently an agency of the U. S. Government required a special container. After all the red tape was cut only five days remained before the delivery date.

Upon completion the container was thoroughly tested and accepted by *amazed* government inspectors. Shrugging off this rapid performance, John Jones, Director of Jones and Company, said: "We are always glad to do the impossible. In fact, it is almost an everyday occurrence with us at Jones and Company."

Also in the category of surging self-praise:

"Jones and Company, a leader in research, development and production of electronic equipment for government and industry..."

"Smith and Company, Chicago manufacturer and distributor of organic chemicals, petrochemicals and imported and domestic specialty and bulk chemicals..."

"Smith and Company, prominent in the chemicals field for 35 years..."

As we have said, it is a matter of orientation. Orient the information to the editor. Give him the solid information he would like to have for his readers. Leave the beating of the drums to the Drum and Bugle Corps.

Now to Organization. Publicity can have a powerful impact on sales. We all know that and can cite dozens of examples. Therefore, the attainment of appropriate editorial recognition is of top-rung importance, in terms of sales.

It follows that the importance of the publicity manager's job should be recognized on any corporate organization chart. It is not a peripheral function of marketing—it is one of the most vital. For, in talking with an editor, he is talking to a host of customers or prospective customers.

The publicity manager should be recognized for his particular knowledge and skills. He should, within the organization, have stature and adequate authority to discharge his responsibilities. His may well be, in effect, the most important sales territory you have. Any company which ignores that fundamental of organization is simply contributing to the comfort and serenity of its competitors.

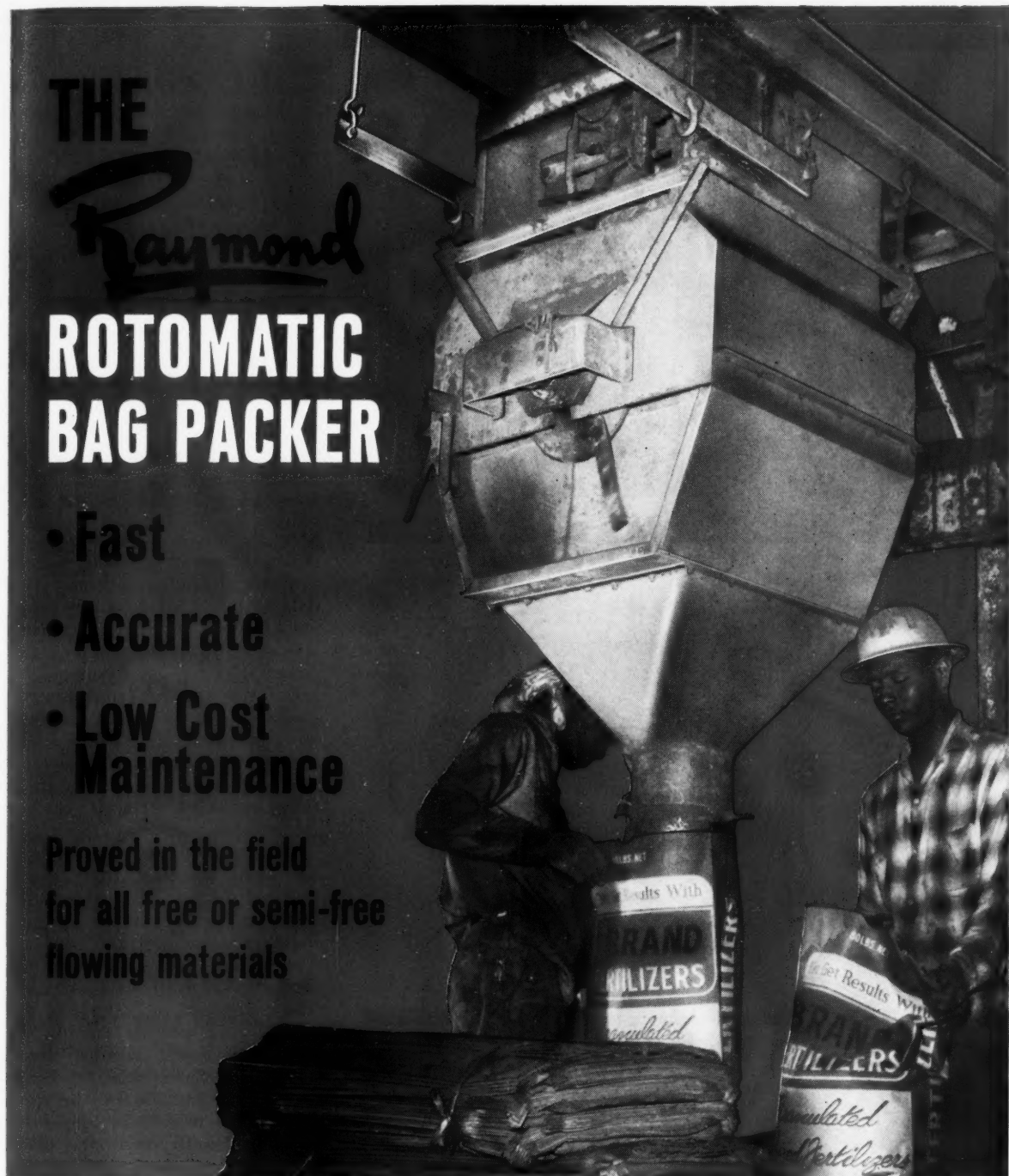
Remember: Know your publications; keep your releases short and drivel-free; be forthright and honest, don't try to fool editors; jettison the adjectives, and write for the editor, not the boss. And make sure your internal organization is sound, functional. ▲

- *You may have a story that's "crying to be written."*
- *How about your publicity manager—is he the right man for the job? His may be the most important sales territory you have.*
- *Know your publications; keep your releases short and drivel-free; be forthright and honest; write for the editor.*

THE *Raymond* ROTOMATIC BAG PACKER

- Fast
- Accurate
- Low Cost Maintenance

Proved in the field
for all free or semi-free
flowing materials



That's right! Speed, Accuracy and low-cost maintenance . . . proven in full production line operation. It's the Bag Packer that can give you new economy in your bag packing operation. The Raymond Rotomatic Packer is fully automatic, all mechanical, and requires no outside motivation such as electricity or compressed air. It is gravity operated and uses the even balance scale principle to deliver proved accuracy. Get complete details now from your Raymond representative or write

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BAG CORPORATION

Middletown, Ohio • A Division of Albemarle Paper Mfg. Co.

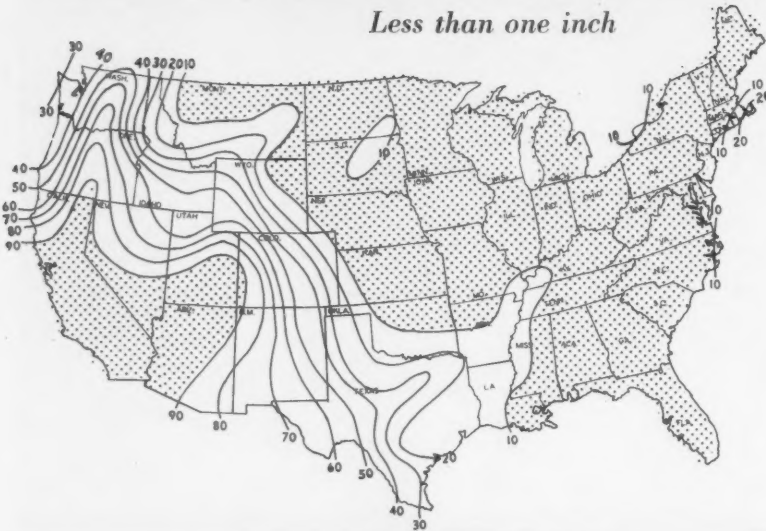
Atlanta • Baltimore • Chicago • Kansas City • Louisville • New York

"Maker of RUGGED MULTIWALL PACKAGING for Industry"

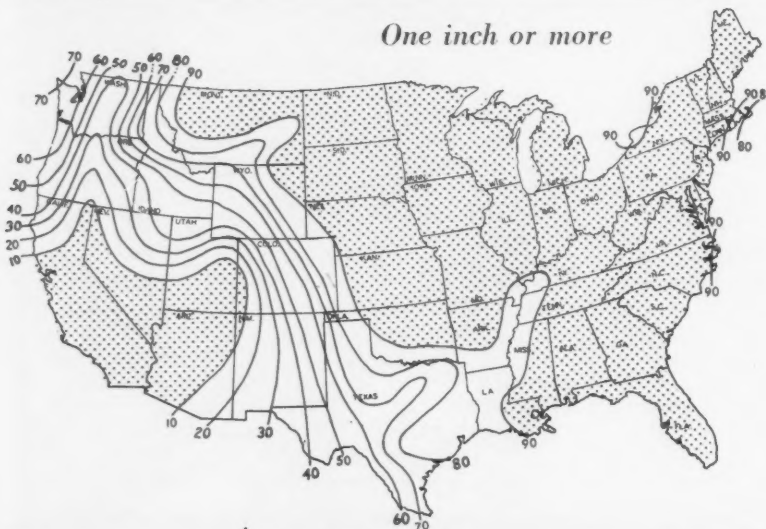


june RAINFALL

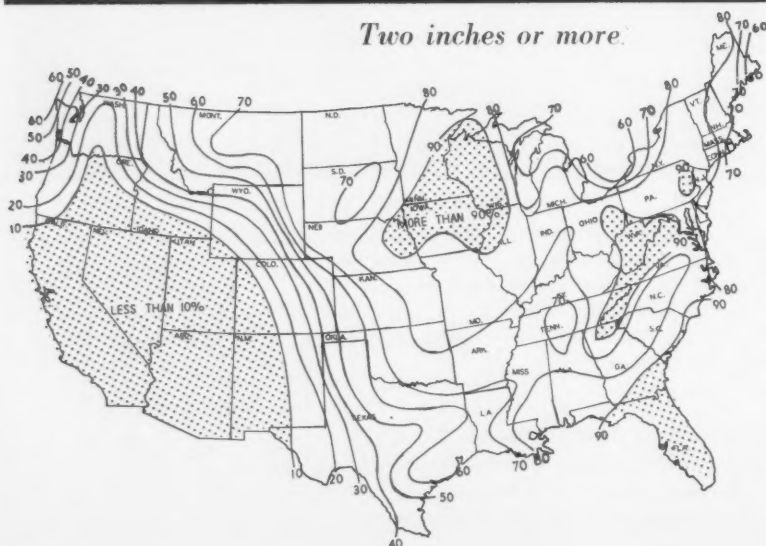
Less than one inch



One inch or more



Two inches or more



***FC continues
its exclusive
weather
service for
the industry***

By VAUGHN HAVENS

THE accompanying maps indicate the chances of receiving various amounts of rainfall in June. The data are presented in per cent probability which is readily converted into odds or risk of a certain event occurring or not. For example, 80 per cent probability represents the likelihood of occurrence of an event 80 chances out of 100, or 8 times out of 10. Of course this implies that the event will *not* occur 2 times out of 10, for a 20 per cent probability.

The information presented here has been compiled from thirty years of June rainfall records for 200 U. S. Weather Bureau stations in every section of the country. The period used was from 1928 through 1957 in all but a few cases. The results are an example of the use of past weather records for estimating future weather risks, the only reliable way in which weather information can be used for planning more than a few days ahead. Of course, day-to-day plans should still be made with the aid of the latest weather broadcasts.

HOW TO USE THE MAPS

One or two simple examples should help to show how these maps can be used to provide a quantitative estimate of weather risks with regard to June rainfall. Supposing your plans for June would be adversely affected if the month brought 5 inches or more to your area. If your area happened to be western Kansas, the 20 per cent probability line means that

june RAINFALL

the odds are about 8 to 2 in your favor. However, if your area were the Gulf Coast of Florida, the probability of 70 per cent or more indicates odds of at least 7 to 3 against you.

Now suppose you're working on a project that should prove highly successful unless June in your area is very dry, i.e., less than one inch. Therefore, if your area is anywhere within the shaded eastern portion of the map, the odds are better than 9 to 1 in your favor, while in the extreme southwestern part of the country, the odds would be better than 9 to 1 against a June rainfall of one inch or more.

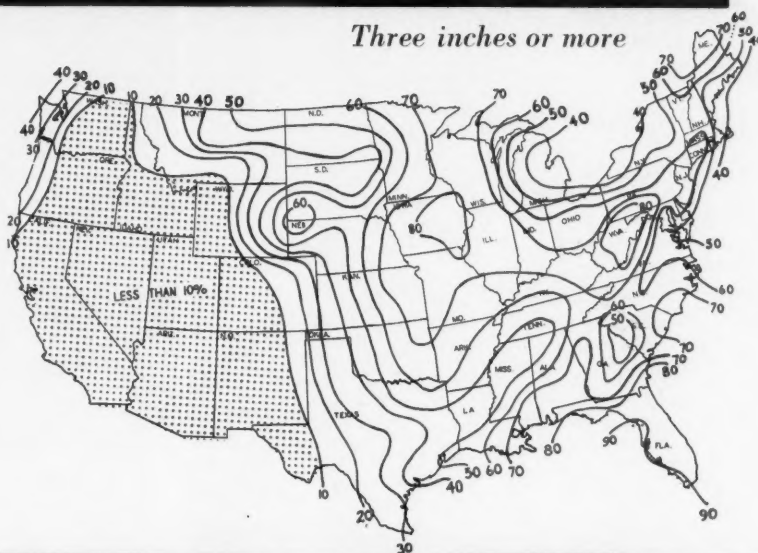
Where an area is completely surrounded by a certain probability line, all stations in the area have a probability somewhat above the value for this line, if the next line has a lower value, the enclosed area will have a somewhat lower value than the probability line enclosing it. For example, on the "two inches or more" map there is a large area west of Lake Michigan enclosed by a 90 per cent line. All the stations in this area have recorded two inches or more in June in more than 27 of the 30 years studied. On the "five inches or more" map, the large area in the southeast surrounded by the 20 per cent line is an area in which all the stations have recorded five inches or more in fewer than 6 of the 30 years studied.

HOW THEY WERE PREPARED

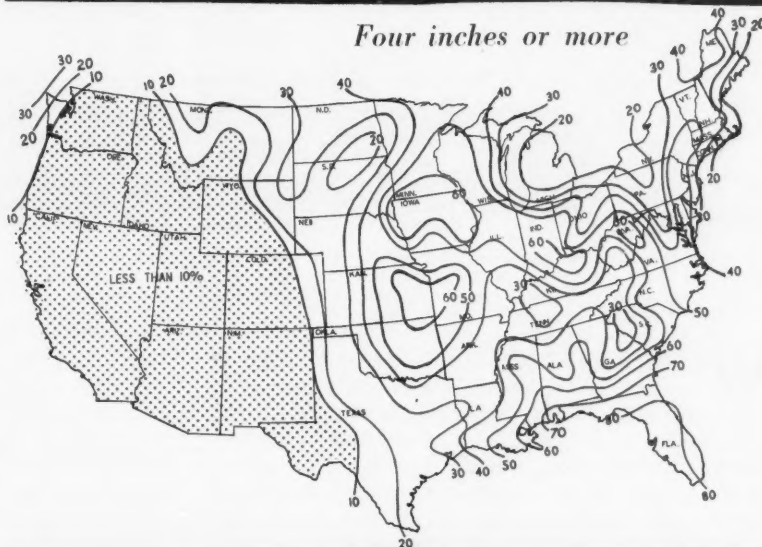
More than 6000 June rainfall records were used in preparing these maps. Even so, a certain amount of smoothing of the data was required in order to highlight the major features of the rainfall distribution and avoid their being obscured by minor variations. In addition, the maps should be used with caution in mountainous terrain since differences in elevation and exposure to the prevailing winds can cause large differences in rainfall between nearby locations. Because local showers are more frequent in June than in May, some of the June maps present a more irregular pattern than the May maps which appeared in the April issue of FARM CHEMICALS.

MAY, 1960

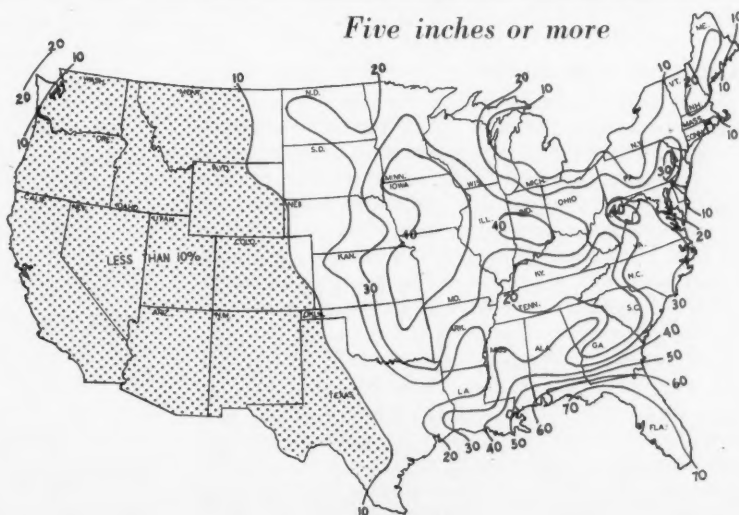
Three inches or more



Four inches or more



Five inches or more



MATERIALS HANDLING CUSTOM APPLICATION



What's ahead in PACKAGING?

WHAT'S AHEAD in packaging? The first stage of the packaging revolution which is expected to take place in the decade of the Sixties was unveiled in the exhibits of 363 companies at the American Management Association's National Packaging Exposition at Convention Hall. Every inch of available exhibit space in the huge seven acre auditorium had been sold out for months and about 25,000 visitors from every continent attended. The exposition was held in Atlantic City, N. J., April 4-7.

PACKAGING FOR PROFIT

Accompanying the exposition was the association's annual packaging conference. This year's theme, "Packaging for Profit," was emphasized in all sessions.

After a keynote speech, "Are You Ready to Package in the Sixties?" the first day's talks were devoted to the relationship of packaging to products and profits and case histories of particular companies. Package marketing, manufacturing and research, discussions of package development, engineering, design and merchandising were presented.

Visitors saw hundreds of displays of the 71 types of packaging materials and supplies, 61 types of container supplies, and 99 types of packaging machinery equipment. Available for study were special services such as contract packaging, film converting, cylinder engraving, decorating on glass, plastic and ceramics, designing and engineering, custom finishing and coat-

ing, custom laminating, plastic molding, photoengraving, thermoforming of plastic sheet, among others.

Some 4,000 experts of exhibiting companies were present to answer visitors' questions.

While the use of polyethylene predominated the scene at Convention Hall for a myriad number of consumer products, the need for advanced packaging methods in the fertilizer industry was not disregarded.

An extensible kraft paper with "two-way stretch" that reduces breakage of multiwall bags and other paper products used for heavy duty packaging was introduced by the Hollingsworth & Whitney Division of Scott Paper Company.

With more than two million tons of paper used annually in the manufacture of bags, the H&W extensible kraft is expected to find a ready market, especially for a wide variety of grain, feed, cement, chemicals, fertilizers, and other granular, powdery, and pelletized materials, Scott Paper announced.

WEST VIRGINIA'S EXHIBIT

A highlight of the West Virginia Pulp & Paper booth was the bench-top working model of the unit used to put the built-in stretch and toughness in Clupak paper.

Raymond Bag Corporation introduced a Rotomatic Bag Placer that can bring your filling line nearer to complete automation than thought possible, and at



Left: Johnny Unitas, All-Pro quarterback of the National Football League's champion Baltimore Colts, throws one of his bullet passes from a distance of 50 feet at a target of Expanda-Kraft extensible paper. **Above,** he points to an indentation on the target, showing how the paper "gave" but did not break when barraged with his passes.

the same time give speeds up to 28 bags per minute with complete accuracy.

International's "Hy-Poly" Kraft was displayed to emphasize the quality of their moisture-vapor protection sacks. A bag of calcium chloride, protected by "Hy-Poly", was given a Turkish bath in 95% relative humidity in 120° F. for 48 hrs. The thirsty crystals poured out as though it had been stored in the Sahara, said International.

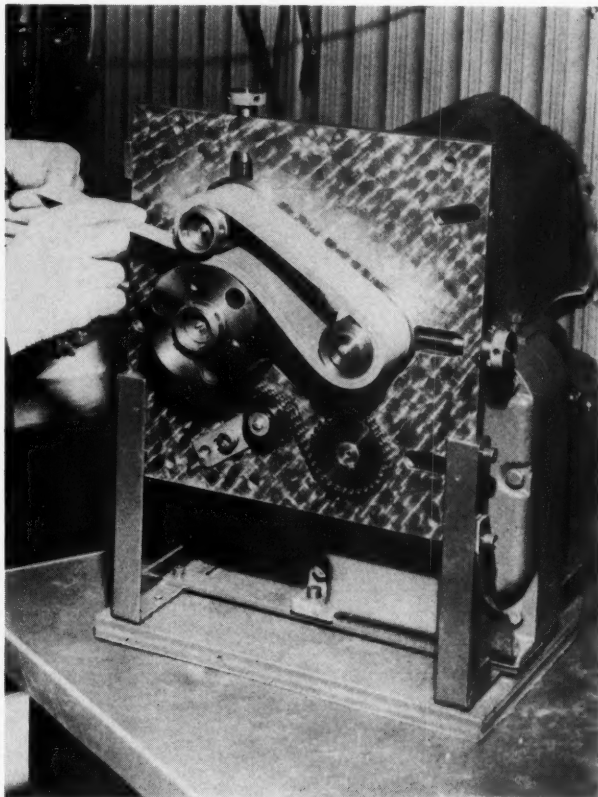
ST. REGIS INTRODUCES CAPCOTE PE

St. Regis introduced their Capcote PE, offering improved moisture protection for multiwall bags. It imparts superior moisture barrier protection to a PE-coated sheet and permits economies not possible with conventionally coated kraft papers, says St. Regis.

Anti-slip characteristics of a multiwall bag were demonstrated by Monsanto with an especially prepared exhibit.

A pressure-sticking tape developed and manufactured by Bemis for multiwall manufacturing and closing was effectively demonstrated. It sticks tightly and permanently with light pressure and used over a sewn seam results in sift-proof multiwall closures.

Paul O. Vogt, of Spencerville, Ind., for many years packaging and warehousing specialist for General Electric Co., now a consultant in the field, declared



This motorized experimental machine was demonstrated at the AMA Packaging Exhibition in Atlantic City by West Virginia Pulp and Paper. The unit, which produces 2" samples of extensible paper, is the smallest of ten experimental models designed to further the development of Clupak paper and make it available for many more uses. It was one of the highlights of Westvaco's exhibit.

that the packaging revolution would also invade the industrial world.

"The last major breakthrough was in the 1930's when corrugated paperboard brought about vast changes in design and techniques," Vogt said. "The latest one is here now—in plastics which will supplant paper in a thousand ways when the cost factor is resolved. We are seeing heavy industrial machinery wrapped in plastic film, bolted to a skid or a flat car and shipped to the ends of the world.

"Paper producers, of course, are reacting to these changes with their own emphasis on research and development. We are beginning to see new, tough, water-resistant paper that competes with anything plastic producers have devised—for heavy industrial purposes, anyway. For all who need packaging, these developments are rewarding."

Vogt said large volume users of plastic film have decided to make substantial plant investments to produce the plastics themselves. By the end of 1960, he said, certain plastic materials needed to meet packaging requirements will be produced right in the plants of the largest consumers. "New developments in resins and chemicals will bring down the cost of the components of plastic film," Mr. Vogt said, "and when that happens we may find many other film users making their own." ▲

MATERIALS HANDLING CUSTOM APPLICATION



A MAJOR economic breakthrough in the paper packaging industry has been achieved with the development of a new high-density polyethylene extrusion coating compound, reports Union Carbide Plastics Company.

This material they developed, designated DGDD-7401 Natural, virtually cuts in half the coating weights required to give paper excellent impermeability to moisture, grease and oils.

DGDD-7401 Natural can be extruded onto paper at good commercial speeds in coating weights as low as six pounds per ream. Formerly, 20 pounds per ream was the lowest practical coating weight possible with high-density polyethylene.

SHIPPING "THIRSTY CRYSTALS"

Within the past few months, International Paper Co. has commercially introduced multiwall shipping bags having a coating extruded from DGDD-7401 Natural. The high-density coated multiwall bag is especially suited for use in the shipment of such "thirsty crystal" materials as certain resins and compounds, calcium chloride and a wide variety of fertilizers, including ammonium nitrate. The coating maintains the vital dryness of these products and keeps them free-flowing, even in high temperatures and humidities.

In a 360-hour test at 100 deg. F. and 90 per cent relative humidity, high-density (0.95) polyethylene-coated Kraft paper multiwall bags, filled with 50 pounds of calcium chloride, averaged far less moisture pickup than multiwalls having heavier coatings of low-density (0.917) polyethylene. For example, a 6-pound per ream coating of high-density polyethylene held moisture pickup to .057 pounds per 50-pound bag per 24 hours. Comparable figures for a 10-pound low-density coated bag were .066 pounds moisture pickup per 24 hours.

Similar ratios held true in heavier coatings. An 8-pound per ream high-density coating showed an average moisture pickup of .056 pounds per 24 hours,

while a 15-pound low-density coating averaged out to a .058 pound pickup. An 11-pound high-density coating had a pickup of only .050 pounds, compared to .054 pounds for a 20-pound low-density coating.

Multiplied by the thousands of multiwall bags a large chemical manufacturer uses, high-density polyethylene coatings can produce significant savings. Product protection is improved while packaging costs are lowered because less polyethylene is needed. Depending on bag construction, International estimates that overall savings can range from \$1.50 to \$14.50 per thousand bags.

Union Carbide Plastics Company reports that data obtained shows that the moisture protection offered by a 6-pound per ream high-density polyethylene coating surpasses that of asphalt/paper laminated constructions commonly used for shipping highly moisture-critical products. The polyethylene coating also gives greater protection to the paper against deterioration from the high acid/alkali content of such products as ammonium nitrate, both in shipping and through extended storage periods.

SCUFF AND ABRASION RESISTANCE

In addition to its high moisture barrier and chemical resistance properties, DGDD-7401 Natural gives multiwall bags superior scuff and abrasion resistance, improved slip properties and higher heat resistance. Also important, for other packaging applications as well as for multiwall bags, is the excellent grease and oil barrier properties of high-density coatings.

In the laboratories, under exposure to several high-penetrating substances, 1.5-mil high-density coatings extruded from DGDD-7401 Natural onto 25-pouch paper registered much lower permeability ratings than low-density coatings of the same thickness. For example, in a test with motor oil, high-density coatings averaged 120 days to failure (the first sign of staining on the uncoated side) compared to 6 days for the low-density coatings. ▲

READER SERVICE

*FREE INFORMATION to help you
solve fertilizer, pesticide problems*

Chemicals

134—"SULPHUR MANUAL"

Texas Gulf Sulphur Co.'s newly issued "Sulphur Manual" is available to readers now using or planning to use sulfur, solid or molten. It is divided into four sections, followed by an Appendix. Section I discusses "The Sulphur Industry." Section II recommends procedures for "Shipping of Molten Sulphur." Section III details "Handling and Storage of Molten Sulphur," and Section IV, "Analysis of Sulphur." To obtain your copy of this interesting manual,

CIRCLE 134 ON SERVICE CARD

135—TAKO KAOLIN

Year after year, TAKO Airfloated Colloidal Kaolin is used in large tonnages—as a diluent-carrier in formulations of pesticides and as a prilling and coating agent in high analysis fertilizers, reports Thomas Alabama Kaolin Co. Produced under laboratory control, TAKO is said to be non-abrasive, non-hygroscopic, non-caking and free flowing. For complete information on the material

CIRCLE 135 ON SERVICE CARD

136—TEXACO MANUAL

A manual on ammonia and nitrogen solutions is available from Texaco, Inc. as long as the supply lasts. In addition to offering complete, authoritative information about ammonia, it shows how formulators can use NH_3 to best advantage. There are sections on mixed fertilizer manufacturing processes, safety, agricultural and industrial uses of ammonia. Charts and tables show specifications of Texaco anhydrous and aqua ammonia and nitrogen solutions; vapor pressure; hygroscopicity and solubility of common fertilizer materials; comparative advantages of pug-mill vs. granulating drum mixer, data on sulfuric acid and phosphoric acid; and many others. To obtain your copy,

CIRCLE 136 ON SERVICE CARD

137—APPLYING SEVIN FROM THE AIR

Aerial application of Sevin for cotton insect control offers many practical advantages, according to Union Carbide Chemicals Co. Among those claimed by the manufacturer: Positive lasting control; only one material in the tank, since Sevin controls all major cotton insects; safer to use; and coverage growers can see, since Sevin Sprayable dries white and dust is readily visible. For details,

CIRCLE 137 ON SERVICE CARD

138—UREA-AMMONIA SOLUTIONS

Grand River Chemical Div., Deere & Co. claims many advantages for its urea-

ammonia solutions in the manufacture of liquid and dry fertilizers: improved physical properties of mixed goods, non-corrosive to equipment, safety in handling, and it resists leaching. Free technical information is available. Simply

CIRCLE 138 ON SERVICE CARD

139—R&H FUNGICIDES

Data on Dithane M-22 and Dithane Z-78 fungicides and Kelthane miticide is offered custom sprayers by Rohm & Haas Co. The company says that Dithane M-22, maneb, is the most versatile and widely used of all agricultural fungicides. Dithane Z-78, zineb, controls greasy spot and russetting on citrus fruits. Complete information will be yours, if you

CIRCLE 139 ON SERVICE CARD

140—HIGH-K MURIATE

Southwest Potash Corp.—which just moved to new offices at 1270 Avenue of the Americas in New York City—will be pleased to send you information on high-grade uniform, coarse and granular muriate of potash. Simply

CIRCLE 140 ON SERVICE CARD

141—COPPER SULFATE FORMULATION

Information on formulating Triangle Brand copper sulfate into your products has been prepared by Phelps Dodge Refining Corp. It is used as a "soil enricher" in fertilizers, is compatible with most insecticides. In addition, it is used as a water treatment and wood preservative. For formulation information,

CIRCLE 141 ON SERVICE CARD

142—COMPUTER SERVICE

Complete information on how its Electronic Computer Service can help you is available from Phillips Chemical Co. By employing the "brains" of the electronic computer formulating machine, the company helps fertilizer mixers figure their formulations. The company supplies nitrogen solutions, anhydrous ammonia, ammonium nitrate, ammonium sulfate and triple superphosphate. To find out more about their computer service,

CIRCLE 142 ON SERVICE CARD

143—CPG FOR FERTILIZER AND PESTICIDE MIXES

Colloidal Products Co. says its CPG dispersant-adjuvant is suggested for use with nitrogen solutions and mixed liquid fertilizer solutions when addition of emulsifiable Nemagon, Fumazone, 2,4-D or Aldrin is indicated. Used at one quart per 100 gallons of spray solution, added to the spray tank when it is almost full, CPG will stabilize pesticide-fertilizer solution combinations long enough to permit their application, Colloidal claims. For additional information,

CIRCLE 143 ON SERVICE CARD

144—BOTANICAL PESTICIDES

S. B. Penick & Co. suggests you use botanical pesticides for safety and effectiveness. Among their products are powdered cube, brittle extract of cube, powdered pyrethrum flowers, synergized pyrethrum extracts, calcined sabadilla, powdered ryania and Ryanicide 50 W.P. Complete information is available, by

CIRCLING 144 ON SERVICE CARD

145—FLORIDIN BOOKLET

"Floridin Company Products for Agricultural Chemical Processing" is a 16-page booklet available to the industry from Floridin Co. Beginning with general information on Florida fuller's earth and its uses in pesticide formulations, the bulletin contains sections on Dilux and Dilux A, Florex and Floridin, and Florigel-Fine Grade. To receive a copy of this helpful literature, just

CIRCLE 145 ON SERVICE CARD

146—OPPORTUNITIES WITH VAPAM

"Your Selling Opportunities with Vapam Soil Fumigant" is the title of a brochure published by Stauffer Chemical Co. It gives information on the product and describes the company's advertising and sales promotion program. A post card included in the bulletin makes it easy to request additional information. Obtain your copy by

CIRCLING 146 ON SERVICE CARD

147—PORTERS CREEK CLAY BULLETIN

Porters Creek Clay Dust for insecticide diluents, Granules for agriculture applications and Fines for conditioning fertilizers are described in a technical bulletin from Star Enterprises, Inc. Data sheets are included for Creek-O-Nite Clay #6 and #20-50, a "Creek-O-Nite heptachlor and chlordane assay," a "summary of evalua-

how to use the READER SERVICE CARD

- Circle number of literature you want
- Print or type your name, position, company and address
- Clip and mail the Service Card

**See pages 51, 52 and 53 for information
on these Reader Service numbers:**

- | | |
|----------------------------------|-----------------------------|
| 161—Hodag Chemical Bulletin | 164—Hanson Trak-Pak |
| 162—Vulcanol Spray Mulch | 165—Determining True Volume |
| 163—Highway Bulk Material Hauler | 166—Removing Tramp Iron |
| 167—Boom Kit from Hahn | |

tion of inert dust diluents and various types of aircraft" and results of test using the product as a conditioner to prevent caking of granular 20-10-10 during storage in bags. Obtain your copy by

CIRCLING 147 ON SERVICE CARD

148—POTASH BROCHURE

Publication of a four-page, two-color brochure has been announced by United States Potash Co. Description, typical chemical analysis, typical particle size analysis and uses for three grades of muriate of potash are included, along with shipping information. To receive a copy, just

CIRCLE 148 ON SERVICE CARD

Process Equipment

149—ARMORED PIPE BULLETIN

Issuance of a new bulletin FRP-1 which describes the various properties of recently developed Haveg Fiber Glass Reinforced Plastic Pipe for chemical corrosion control has been announced by Haveg Industries, Inc. Engineering facts such as high impact resistance coupled with corrosion control are illustrated by tables and charts. Copies are available by

CIRCLING 149 ON SERVICE CARD

150—MARLOW PUMPS

Marlow self-priming liquid fertilizer pumps for tank truck and bulk plant service are featured in a brochure from Bell & Gossett Co. Pumps are available with both electric motor or gasoline engine. A pump performance chart includes capacity in G.P.M. for eight models. A copy can be yours, by

CIRCLING 150 ON SERVICE CARD

151—PACKAGED LIQUID FERTILIZER PLANTS

Ten features of Auto-Flo liquid fertilizer manufacturing units are contained in a four-page bulletin from Alton Bottled-Gas Co. Available in capacities from 5 to 25 tons per hour, the unit is mounted on an 8' x 8' steel skid. A single pump provides product transfer, recirculation for cooling, and mixing, Alton reports. To receive a copy of the bulletin

CIRCLE 151 ON SERVICE CARD

Materials Handling

152—H-30 PAYLOADER

The Frank G. Hough Co. says its H-30 is an entirely new tractor-shovel of a size and type never before available in their

"Payloader" line. It has an operating capacity of 3,000 lbs. and is equipped with a one cu. yd. (S.A.E. rated) bucket. Four-wheel-drive features Hough's power-shift "Paylomatic" transmission with matched torque-converter. The H-30 is powered with a 77½ hp heavy-duty gas engine, has four-wheel hydraulic brakes. Complete information and specifications can be yours, by

CIRCLING 152 ON SERVICE CARD

153—LIMBEROLLER BULLETIN

The Joy Series 200 Limberoller belt conveyor idler, an improved version of the original two-bearing catenary idler introduced by Joy Manufacturing Co. in 1953, is described in a new 20-page bulletin. It contains complete specifications, a detailed description of construction features, installation photographs, application instructions and an explanation of advantages. To get yours,

CIRCLE 153 ON SERVICE CARD

154—FLEXI-LINER IN USE FOR 7 YEARS

Flexi-Liners, large balloon-type tank liners, when first introduced to the chemical processing industry, were looked upon by many as a temporary arrangement for storing corrosive solutions. However, Flexi-Liner Co. says that a report from Ray Baker, general plant manager of Chemical Fertilizer Co. in Modesto, discloses the fact that the original Flexi-Liner is still in use after seven years of continuous service. A 12-page booklet describing the liners is available, by

CIRCLING 154 ON SERVICE CARD

Application Equipment

155—THE AG-CAT

Designed specifically for spraying and dusting, the Ag-Cat is certificated for a 1200 lb. hopper load with a 220 hp Continental, reports Grumman Aircraft Engineering Corp. Among its features: external rigging, easily accessible components, interchangeable ailerons and wing panels. Complete information is available. Simply

CIRCLE 155 ON SERVICE CARD

156—AIR CARRIER SPRAYING HANDBOOK

A practical handbook telling how to get best results from air carrier spraying in orchards and row and field crops, is offered without charge or obligation by Besler Corp. Besler says this is not a sales booklet. Among subjects covered: How to spray in cross winds and in head

and tail winds; fighting frost with an air sprayer; how night spraying differs; why outside rows need special attention; how to select an air carrier sprayer for particular conditions; importance of spray droplet size; spraying on muddy ground, and many others. For your free copy

CIRCLE 156 ON SERVICE CARD

157—HI-BOY SPRAYER LITERATURE

Hahn Inc. offers trade information and a 16-page brochure and catalog on its 1960 line of Hahn Hi-Boy Self-Propelled High-Clearance Sprayers and accessories. The brochure dramatically illustrates uses and benefits of high-clearance sprayers. Hahn reports the Hi-Boy is especially designed for applying liquid fertilizers, lay-by weed and insect control chemicals, and chemical defoliants. They'll see that you get a copy of the information and brochure, if you

CIRCLE 157 ON SERVICE CARD

158—BOOM EXTENSION FOR AGR. SPRAYERS

Announcement of a new spray nozzle has been made by Delavan Mfg. Co. Sold under the trade name Delavan BX, these tips are designed to offer additional coverage for spray booms at flow rates consistent with standard boom nozzles. They are available from 5 GPA through 10 GPA. Manufactured as both a single and double nozzle, the BX offers additional coverage ranging from 68" to 104" for single nozzles and from 153" to 194" for double nozzles when both are placed at 30" boom height. Complete information is available. Simply

CIRCLE 158 ON SERVICE CARD

159—BAUGHMAN PULL-TYPE SPREADER

The "Quick-Spread," Baughman Manufacturing Co. reports, is engineered and built using the same principles and engineering as large fertilizer spreaders. Capacity is 2,000 pounds of 60 lb. per cu. ft. granular fertilizer. It has a ground drive discharge for material, and the spinner fan is powered by Power Take Off or an auxiliary gas engine that gives the spreader a complete source of spreading power, enabling it to be pulled by pick-up truck or any kind of forward motion. The "Quick-Spread" spreads a pattern about 32 feet wide and is said to be highly maneuverable. To obtain a bulletin on the unit,

CIRCLE 159 ON SERVICE CARD

Packaging

160—NEW PE COMPOUND

Union Carbide Plastics Co. has developed a new high-density polyethylene compound used in coating multiwall bags. The material is reported to virtually cut in half coating weights required to give paper excellent impermeability to moisture, grease and oils. Other advantages claimed: superior scuff and abrasion resistance, improved slip properties and higher heat resistance. For details,

CIRCLE 160 ON SERVICE CARD

FARM CHEMICALS



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He's one of several hundred Cyanamid people who mine, process, research, deliver and service phosphatic materials for your acidulation and mixed fertilizer business. These people put Cyanamid's more than 40 years of phosphate experience into the kind of products and services you can use. Take advantage of both. Pick up your phone and call your Cyanamid representative.

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Technical Service: Cyanamid's staff of technical experts are on 24-hour alert. Often, what are new problems to you are solved problems to them. Make your formulation and production problems theirs... that's their job.

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Products that serve: Cyanamid's only phosphate business is mining and manufacturing the highest quality products for your mixed fertilizer requirements.

They are:

- Florida Natural Phosphate Rock
- TREBO-PHOS® — The Triple Superphosphate with controlled porosity
- Phosphoric acid for acidulation

To manufacture fertilizers that sell... mix with Cyanamid's phosphates and service. American Cyanamid Company, Agricultural Division, New York 20, N. Y. ®TREBO-PHOS is American Cyanamid Company's trademark for its triple superphosphate.



CYANAMID SERVES THE MAN WHO MAKES A BUSINESS OF AGRICULTURE

the PESTICIDE SITUATION for 1959-60

U. S. Production of Some Major Pesticidal Chemicals Calendar Years, 1957-1959

Chemical	1957 1,000 lb.	1958 1,000 lb.	1959 ¹ 1,000 lb.
Aldrin, chlordane, dieldrin, endrin, heptachlor, and toxaphene (combined production).....	75,424	98,280	86,868
Benzene hexachloride (gross) ²	39,559	30,797 ⁴	26,733
Benzene hexachloride (gamma equivalent) ²	7,300	6,500 ⁴	5,197
Calcium arsenate.....	19,478	10,432 ⁴	5
Copper naphthenate.....	2,130	1,853	5
Copper sulfate.....	141,360	97,192	80,584
2,4-D acid.....	34,251	30,944 ⁴	29,277
2,4-D acid esters.....	24,137	21,938 ⁴	31,194
2,4-D acid salts ³	3,182	2,964 ⁴	5
DDT.....	124,545	145,328 ⁴	156,738
Disodium methylarsenate.....	618	368	5
Lead arsenate.....	11,920	14,938	5
Methyl bromide.....	9,653	10,224	5
Methyl parathion.....	1,925	5,018	5
Nabam.....	4,961	5	5
Parathion ("ethyl parathion").....	5,962	5,439	5
Pentachlorophenol.....	28,346	35,177	5
Phenyl mercuric acetate.....	570	1,056	5
Sodium chlorate.....	118,284	134,498	175,330
2,4,5-T acid.....	5,334	3,678	5,583
2,4,5-T acid esters.....	6,831	5,230	5
Ziram.....	1,277	1,178	5

¹Preliminary. ²1958 and 1959 include lindane, 1957 without lindane. ³Sodium and amine salts. ⁴Revised figure. ⁵Figure not yet available. ⁶Figure not publishable because it would disclose individual operations.

Sources: U. S. Tariff Commission; U. S. Bureau of the Census; U. S. Bureau of Mines; chemical industry.

BARRING unexpected demands, supplies of pesticides are expected to be adequate during the 1959-60 crop year (12 months ending Sept. 30) to meet requirements of agricultural and other consumers in the United States as well as export trade.

"Though the figures for the 1959 production of all synthetic pesticidal chemicals will not be available for several weeks, it will probably be higher than in 1958 when 539,396,000 pounds were produced, and possibly close to the 1956 record of 569,927,000 pounds," reported Harold H. Shepard, of the Commodity Stabilization Service, U. S. Department of Agriculture.

"Production of DDT was higher in 1959 than ever before, while benzene hexachloride and copper sulfate production was lower than preceding years. The industry was on the verge of a shortage of benzene by the time the 1959 steel strike was settled," Shepard said. Benzene requirements amounted to possibly 35,000,000, Shepard reported.

Total carryover from the 1959 season by primary manufacturers and formulators of pesticides was about the same as the previous year. Stocks of primary chemicals in the possession of their producers averaged 12 per cent lower than same period ending September 30, 1958.

1959 CONDITIONS

Insect infestations were normal generally throughout the country during the 1959 growing season, a rather unusual situation. Despite

Value of U. S. Exports of Pesticides

Year	Value Dollars	Year	Value Dollars
1950.....	33,252,777	1955.....	78,980,145
1951.....	64,820,822	1956.....	81,855,888
1952.....	60,626,370	1957.....	86,002,270
1953.....	49,062,083	1958.....	82,066,034
1954.....	62,857,445	1959.....	85,938,859

Source: Derived from data published by the Bureau of the Census.

Pesticides Applied in U. S. Forest Service Programs, 1959

Pesticide	Pounds
Ethylene dibromide.....	950,000
Benzene hexachloride.....	500,000
DDT.....	179,000
Lindane.....	5,000
Malathion.....	2,000
Sevin.....	300
Chlordane.....	2,400
2,4-D and 2,4,5-T (as acids).....	8,000

Primary manufacturers' sales of all pesticidal chemicals advanced about 5 per cent during 1959, amounting to 550-660 million dollars at users' level.

this fact sales of pesticides were definitely higher compared to 1958, according to Shepard. The increase was due largely to the use of more soil insecticides, miticides, pre-emergence herbicides, and nematocides—types which are being applied profitably by an increasing number of growers.

HERBICIDES

According to a survey of the herbicide market published last summer, types of herbicides applied on commercial farms are in the following proportions: post-emergence crop sprays, 51.7 per cent; pre-emergence crop sprays, 6.8 per cent; and pasture weed and brush sprays, 41.5 per cent.

Printed copies of the complete Pesticide Situation for 1959-60 will be available from the U.S.D.A., Reproduction Section, Washington 25, D. C. this month. ▲

U. S. Exports of Pesticides by Calendar Years

Material	1958 1,000 lb.	1959 1,000 lb.	1959 \$1,000
Benzene hexachloride (gamma basis, 6% plus)	1,538	2,427	2,081
Calcium arsenate	1,274	123	12
Copper sulfate (normal and basic)	14,495	5,343	675
2,4-D and 2,4,5-T (acid basis)	6,788	5,760	2,665
DDT, technical	25,292	13,242	2,892
DDT (20-74%, 100% basis)	4,701	3,248	1,315
DDT (75% plus, 100% basis)	40,118	58,497	19,325
Disinfectants, household and industrial	9,070	10,005	4,108
Fumigants	4,184	3,678	1,065
Fungicides, n.e.c.	15,127	14,664	8,035
Herbicides, n.e.c.	11,651	8,261	4,050
Lead arsenate	2,100	1,399	276
Nicotine sulfate (40% basis)	62	7	9
Organic phosphorus insecticides (15% plus)	5,383	13,380	7,980
Paradichlorobenzene	2,870	2,981	366
Polychlor insecticides (15% plus) ¹	53,502	49,459	16,069
Pyrethrum extract	56	70	224
Sulfur, agricultural, n.e.c.	9,246	6,812	268
Agricultural insecticides, n.e.c.	77,706	50,677	8,466
Household and industrial pesticides, n.e.c.	18,212	18,098	6,040
TOTAL	2	2	85,921

¹Includes aldrin, chlordane, DDD, dieldrin, endrin, heptachlor, methoxychlor, toxaphene and related chemicals and mixtures thereof. ²No total weight given because BHC is reported only in terms of the gamma content, DDT as 100% technical, and 2,4-D and 2,4,5-T on the acid basis.

Source of export figures: U. S. Bureau of the Census Report No. FT 410, Part II, codes 82001-82280.

Manufacturers' Stocks of Pesticides (Technical Basis)

September 30, 1959¹

Material	All stocks		Primary producers' stocks	
	Technical and mixed 1,000 lb.	Percentage mixed	Technical 1,000 lb.	1959 as percentage of 1958 ²
Aldrin, chlordane, dieldrin, endrin, heptachlor, toxaphene	39,615	32.5	29,639	128
BHC, including lindane				
Gross basis	21,970	26.3	11,217	66
Gamma basis ³	(4,794)	30.1	(2,098)	56
Calcium arsenate	5,258	21.4	4,850	63
Copper fungicides	14,175	9.1	11,527	86
2,4-D (acid basis)	13,395	62.6	11,374	46
DDT	29,628	36.3	14,192	108
Fumigants, grain and soil	34,572	—	26,348	—
Lead arsenate	4,414	27.5	3,379	129
Miticides, miscellaneous	2,620	59.4	1,257	95
Organic phosphorus compounds	10,259	41.9	4,593	50
Sulfur, ground	29,486	46.0	6,233	76
2,4,5-T (acid basis)	4,295	49.8	3,728	86
Other fungicides	12,922	47.8	7,545	121
Other insecticides	8,008	40.9	4,473	98
Other weed killers	17,017	49.3	16,283	156
Miscellaneous, including rodenticides	2,322	14.7	1,800	87
TOTAL	249,956	36.2	158,438	88

¹Results of survey by U. S. Department of Agriculture in cooperation with the National Agricultural Chemicals Association, final report. ²Based on goods in the possession of their primary manufacturer, i.e., DDT stocks of DDT producers. ³BHC (gamma basis) omitted from totals to avoid duplication.

Domestic Disappearance of Some Major Pesticides for the Crop Year 1958-59¹

Pesticide	Stocks ² Sept. 30, 1958 1,000 lb.	Production 1958-59 1,000 lb.	Exports 1958-59 1,000 lb.	Stocks ² Sept. 30, 1959 1,000 lb.	Disappearance 1958-59 1,000 lb.
Aldrin, chlordane, dieldrin, endrin, heptachlor and toxaphene (combined) ³	23,208	91,970	12,208	29,639	73,331
Benzene hexachloride ⁴	3,727	4,576	1,929	2,098	4,276
Calcium arsenate	7,708	n.a.	583	4,850	n.a.
Copper sulfate ⁵	8,128	88,264	6,554	5,608	84,230
2,4-D (acid equivalent)	24,566	26,123	5,213 ⁶	11,374	34,102
DDT	13,093	156,150	76,369	14,192	78,682
Lead arsenate	2,616	n.a.	1,896	3,379	n.a.
2,4,5-T (acid equivalent)	4,315	5,500	579 ⁶	3,728	5,308

¹Based on available information; crop year is from October 1 to the following September 30. ²Stocks of primary producers only; for 2,4-D and 2,4,5-T, formulated goods in possession of primary producers included also. ³Not corrected for exports below producers' level. ⁴Gamma isomer basis; includes lindane. ⁵Disappearance at primary producers' level for all domestic uses including industrial. ⁶Assumed exports of 2,4,5-T to be one-tenth of combined exports of 2,4-D and 2,4,5-T.

n.a.—Figure not available.

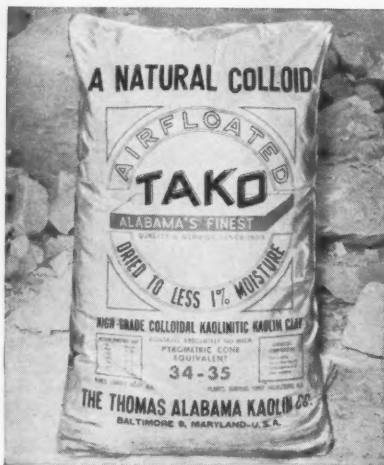
Sources: (Stocks) Survey by Department of Agriculture (except copper sulfate by Bureau of Mines). (Production) Tariff Commission; Bureau of the Census; chemical industry. (Exports) Bureau of the Census.

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"TAKO" Natural High Grade Pure Colloidal Kaolinitic Kaolin Crude from our very extensive deposits is processed by neither adding to nor taking away any of its very desirable properties. Its colloidal properties give increased workability in formulations and its purity is highly desirable due to its compatibility with chemicals.

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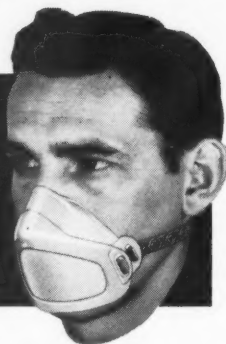
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- 5. Feather-like weight:** Weighs only 1 ounce complete.
- 6. Simplicity and economy:** Only 4 tough, long-wearing, inter-locking parts — all washable. Pure latex filter outwears throw-away type more than 100 to 1.

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PATENT REVIEWS

F
C

By Dr. Melvin Nord

UREA-FORMALDEHYDE FERTILIZER MANUFACTURE

U. S. 2,916,371, issued Dec. 8, 1959 to James M. O'Donnell, describes an improved process for the production of solid urea-formaldehyde fertilizer compositions, by controlling the temperature of the polymerization reaction of a layer or film of the unpolymerized material on a continuous elongated moving surface within the range of 54-58°C. By exercising this control, it is found that the product contains a greater amount of total nitrogen available to the soil.

As shown in Fig. 1, the urea-formaldehyde monomeric solution maintained at a pH of 7 to 9 is agitated and maintained in a holding tank 11 at a temperature of about 58° C. The temperature of the monomer is controlled by a jacket 12. The urea-formaldehyde monomeric solution is pumped from the tank through a discharge line 13 by a proportioning pump 14 which serves to meter the amount required.

An acid catalyst, such as H_3PO_4 necessary to catalyze the urea-formaldehyde reaction is held in tank 16 and is pumped through line 17 to metering pump 18 where it is introduced into line 15. Sufficient catalyst is added to reduce the pH to a range of about 2.0 to 4.0.

The urea-formaldehyde monomeric solution, with the catalyst, is thoroughly mixed by passing through a mixing pump 19 and

out through a flared, elongated orifice 20 which serves to spread the catalyzed polymerizable solution across the surface of a continuous elongated moving belt 21 in the form of a film or layer 22 of predetermined thickness.

The belt is so designed that it moves at a speed to allow the polymerizable film to complete its polymerization as it passes through a heat controlled stage to assure that the requisite temperature of the film is at all times maintained within the critical range of 40° to 58° C., which is recorded by temperature recorder 23. The heat control stage provides for heating elements 24 which supply heat when it is necessary to bring the film temperature to the desired reaction temperature, that is, when the reaction is proceeding endothermically or when heat is necessary to trigger the reaction.

A cooling means 25 is provided for extracting heat when the reaction becomes exothermic so that the reaction temperature never exceeds the maximum critical temperature of 58° C. and a fan 26 is provided to effect cooling of the film immediately upon introduction of the film onto the belt.

After the film 22 has remained on the moving surface for a period of time necessary to complete polymerization, it is removed from the belt by a doctor blade 27 which scrapes the polymerized material into a hopper 28 from which it passes into a neutralizing vessel 29.

Ammonia gas held in a tank 30 is fed through line 31 at a controlled rate so that the requisite amount of ammonia is supplied to the polymerized urea-formaldehyde collected in vessel 29 to effect complete neutralization of the product. The neutralized, polymerized product is then passed from the ammoniator to a drying oven 32 where the residual moisture is removed. Drying is conducted in three or more stages to prevent the harming of the product which would result in reduced activity.

PESTICIDES

U. S. 2,915,429, issued Dec. 1, 1959 to Otto Scherer and Helmut Hahn, assigned to Farbwerke Hoechst A.G. vormalis Meister Lucius & Bruning, discloses the use of o-o'-diethyldithiophosphoric acid-s-(dimethyl-thiocarbamyl-mercaptomethyl)-ester as an acaricide, insecticide, and ovicide.

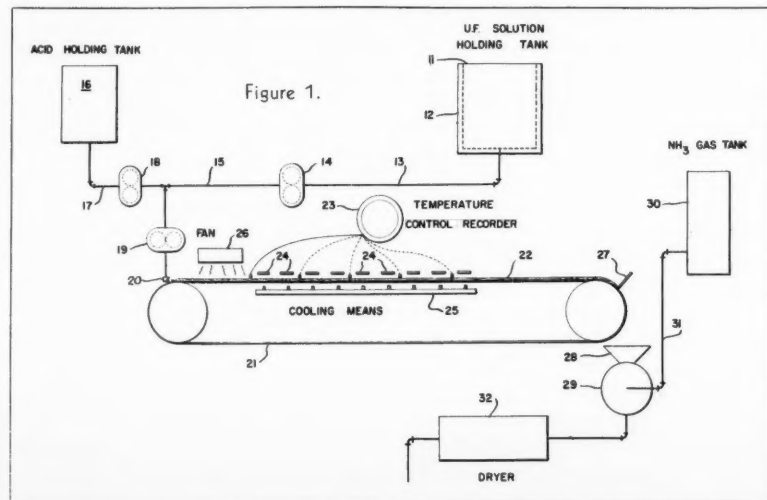
U. S. 2,915,430, issued Dec. 1, 1959 to David Taber and assigned to General Aniline & Film Corp., discloses the nematocidal properties of N-acylpyrrolidones.

U. S. 2,917,429, issued Dec. 15, 1959 to Carleton B. Scott, Irving D. Webb, and John W. Yale, Jr., assigned to Collier Carbon & Chemical Corp., describes a method of destroying nematodes, fungi, and bacteria, using dimethyl polysulfides as the active ingredient.

U. S. 2,918,363, issued Dec. 22, 1959 to George O. Turner, assigned to The Dow Chemical Co., discloses the use of 1,4-dichloro-2-butene for destroying nematodes.

U. S. 2,918,402, issued Dec. 22, 1959 to Jerome F. Fredrick and assigned to The Dodge Chemical Co., discloses bactericidal-fungicidal compositions containing the quaternary ammonium alkyl derivatives of chlorokojic acid (2-chloromethyl-5-hydroxygamma pyrrone).

U. S. 2,919,223, issued Dec. 29, 1959 to Robert G. Baker and assigned to The Dow Chemical Co., discloses the fungicidal properties of parachloro-alpha-iodotoluene.



PEST REPORTS

By Kelvin Dorward*

WEATHER conditions retarded insect activity to a considerable extent during early March but there was a noticeable increase by the latter part of the month.

Although populations of the **spotted alfalfa aphid** were generally low in Arizona, infestations were increasing statewide by the latter part of the month. In Yuma county some alfalfa fields were heavily infested and considerable damage was being inflicted. Heavy infestations of the insect were reported on alfalfa in the Brazos river area of Brazos county, Texas. Light populations, with counts up to 20 per square foot of crown area, were noted in approximately one-half of the alfalfa fields surveyed in the central Oklahoma area. **Pea aphids** were also reported to be heavy on alfalfa throughout Arizona the latter part of March.

Green peach aphids have been very abundant on potatoes in south Dade county, Florida, this season. Although populations have not been as high as in 1959, those present remained for a longer period of time. In Arizona during late March heavy infestations of the insect were present on weeds and flowers in the central part of the state. Populations were light on vegetables but large numbers of winged forms were in the area.

Alfalfa weevil larvae were found infesting alfalfa by mid-March in Oconee and Hancock counties, Georgia. Larvae were also found in South Carolina fields. In Delaware, stalk examination revealed many eggs just hatched or on the verge of hatching. In western Nevada counties adult weevil activity was on the increase due to warm temperatures and spraying had been completed by mid-March. By the latter part of the month alfalfa weevils were active in Colorado, Idaho, and Utah. Infestations of the **Egyptian alfalfa weevil** were medium to heavy and damaging alfalfa in

the Yuma Mesa area of Yuma county, Arizona. General, heavy infestations of the insect were found on alfalfa in the El Centro area of Imperial county, California.

By late March **green peach aphids** were causing severe damage to foliage of peach trees in Dona Ana County, New Mexico. Eggs of the insect were hatching in Mesa, Delta, Garfield and Montrose counties, Colorado. Infestations of the **San Jose scale** were sufficient to cause damage to peach orchards in Nacogdoches county, Texas. In Yuma county, Arizona, **darkling beetles** were numerous in vineyards and causing damage by feeding on the buds.

BOLL WEEVIL SURVIVAL UP IN SEVERAL AREAS

Surveys by cooperating agricultural agencies to determine the number of cotton **boll weevils** surviving the winter have been completed in Louisiana, Mississippi, North and South Carolina, and Texas. The average number of live weevils per acre found in woods trash in the three-parish area of East Carroll, Madison, and Tensas in northeast Louisiana this spring was 4,748 as compared with 2,246 in the spring of 1959. The percent survival rate for the area was 59, with an average of 8,097 live weevils per acre having been found in the 1959 fall hibernation survey.

During the 24 years that records have been maintained in Madison parish, the number of weevils per acre (4,721) found surviving winter hibernation is the highest for the 24-year period. The percent survival for that parish was 96 as compared with the 24-year average of 41.

In Mississippi, woods trash samples were collected in 4 areas comprised of 4 counties each to determine the number of cotton boll weevils that had survived. The average number of live weevils found per acre in the lower delta area was 1,088 compared with the 4,215 entering hibernation. In the central delta area the count was

1,353 live weevils as compared with the fall count of 8,513. Counts for the north delta area were 338 and 4,787; and the hill section, 504 and 2,991. The average of live weevils per acre of woods trash for the state was 821 compared with 464 in the spring of 1959 and 392 in 1958.

Boll weevil survival counts in North and South Carolina were made from surface woods trash collected from 4 areas in the two-state region. The average number of live weevils per acre found this spring in south central South Carolina was 861 compared with 1,318 entering hibernation and 699 found a year ago. Comparable counts in the Coastal Plain area of North and South Carolina were 1,049, 5,082, and 1,963. Counts in the Piedmont area of North and South Carolina were 590, 4383, and 242. Three hundred seventy seven live weevils per acre of trash were found in the north central North Carolina area during the 1960 survival survey compared with 834 going into hibernation and 81 in the 1959 survival survey.

In Florence county, South Carolina, the average number of live weevils per acre found this spring was 1,560 out of 5,434 per acre entering hibernation. This survival of 28.7 percent is approximately 50 percent less than the average of the 17 years for which fall and spring surface woods trash examinations have been made at this station. Since 1947 only in 1952, 1957 and 1958 have fewer surviving weevils been found than at this time.

Hibernation counts were made in the central Texas counties of Falls, Hill, Limestone, and McLennan for the first time in the fall of 1959. It was found that there was an average of 6,631 live boll weevils entering hibernation per acre of woods trash. Recent collections from essentially the same areas revealed an average survival of 2,065 weevils per acre. Comparative figures for this method of determining hibernation information are not available for previous years in the Texas area. ▲

* Chief Staff Officer, Survey & Detection Operations, Plant Pest Control Div., Agricultural Research Service, USDA.



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NEWS OF THE INDUSTRY

SUSQUEHANNA DOUBLES WYO. SULFURIC ACID PRODUCTION



New sulfuric acid plant in Riverton, Wyo.

A new sulfuric acid manufacturing plant at Riverton, Wyo., which doubles the sulfuric acid production capacity of Susquehanna-Western, Inc., Denver subsidiary of The Susquehanna Corp., Chicago, has been placed in operation.

The new unit, second sulfuric acid plant to be operated by the company, expands production capacity to 75,000 tons of acid per year. Susquehanna-Western, Inc. launched its sulfuric acid operations in December, 1958, with completion of Wyoming's first commercial sulfuric acid plant, also at Riverton.

The company's total investment in acid producing plants now exceeds \$1,350,000.

FMC CHEMICALS SIGNS ALABAMA OPTION

Food Machinery and Chemical Corp. has signed an option agreement with the State of Alabama for the purchase and lease of a substantial acreage of state land at Mount Vernon, in the north-eastern section of Mobile County.

Jackson V. Vernon, FMC vice president and director of marketing and distribution for FMC's Chemical Divisions, said that the option was executed to permit further exploration and development in the area for prospective future use as a major plant site for FMC's chemical operations.

TEXACO REPORTS RECORD EARNINGS

Consolidated net income of Texaco Inc. in 1959—highest in the company's history—amounted to \$354,346,323, or \$5.85 a share, compared with \$311,154,995, or \$5.24 a share in 1958, it was

announced by Augustus C. Long, chairman of the board, and James W. Foley, president.

Revenue from sales and services was \$2,678,029,271, a 10.1 per cent increase over 1958.

N DIV. EXPANDS METHANOL, FORMALDEHYDE CAPACITY

Expansion of capacity in two basic industrial chemicals, methanol and formaldehyde, at its South Point, Ohio, plant, has been announced by Nitrogen Div., Allied Chemical Corp.

Methanol capacity will be increased by 50 per cent and formaldehyde by 35 per cent.

S-D PLANT CITY OPERATION WINS 4TH SAFETY AWARD



For the fourth consecutive year, the Presidential Safety Trophy has been awarded to employees of Smith-Douglass Co.'s Plant City, Fla., operation for their outstanding safety record during 1959. R. M. Wilbur, manager of the Florida operation, accepts the trophy from G. T. Newnam, S-D director of safety and labor relations.

NEW DIXIE PLANT

Dixie Fertilizer Co. will build a \$300,000 plant at Meridian, Miss., according to a recent report.

FREEPORT INCREASES SULFUR CAPACITY TO NEW HIGH

Start-up of its new offshore sulfur mine, Grand Isle, will give Freeport Sulphur Co. the "greatest productive capacity" in its history, according to the company's annual report issued recently.

Grand Isle, located in 50 feet of water seven miles off the coast of Louisiana, is the first offshore sulfur installation ever erected and will mine "one of the world's largest known sulfur deposits," the report stated.

COTTON PRODUCERS CORDELE PLANT BEGINS OPERATION

Cotton Producers Association has placed in operation its 40 ton per hour granulating plant at Cordele, Georgia. Utilizing the Weatherly process for control-granulation, the plant will manufacture product size between six and sixteen mesh. The complete building and equipment were erected and placed in operation in five weeks, reports The D. M. Weatherly Company, which designed and erected the plant.

HERCULES POWDER EXPANDS AID-TO-EDUCATION PROGRAM

Under Hercules Powder Co.'s new "matching grants" program, the company will equal, dollar for dollar, contributions made by its employees and retired employees to any accredited college or university, up to a maximum of \$1,000 for each employee in any calendar year.

DOUGLAS SALESMEN TAKE REFRESHER COURSE

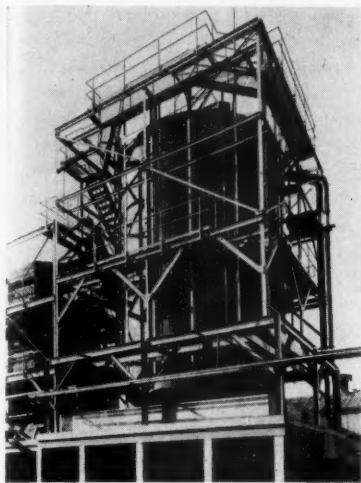


Paul Smith, sales manager and W. C. McCaslin, executive vice president of Douglas Chemical Co., thank John R. Pederson and W. Keith Whitney, entomologists from Kansas State University, for an excellent educational presentation on stored grain insects. A portion of the presentation was devoted to grain aeration.



Pederson and Whitney made use of colored slides in their presentation at the Douglas sales meeting in March. Every year, personnel from K-State's entomology staff give this refresher course to Douglas salesmen. The company's personnel unanimously agree that this is the most important part of the annual sales meeting.

PHOSPHORUS BURNED IN WORLD'S LARGEST GRAPHITE COMBUSTION CHAMBER



Largest diameter graphite combustion chamber ever built is this giant at the Carteret, N. J. plant of The American Agricultural Chemical Co., according to National Carbon Co. Boasting an inner diameter of slightly more than 20 feet, the chamber is used to burn elemental phosphorus in air. Subsequent hydration in the large carbon tower on the left produces phosphoric acid.

The combustion chamber consists of a total of 320 accurately-machined graphite blocks, each measuring 9 by 22½ by 36 inches, supplied by National Carbon Co., which also manufactured the carbon blocks for the tower.

NEW OFFICERS FOR PACIFIC CHEM. & FERTILIZER CO.

George W. Murphy, an auto dealer, has become chairman of the board of Pacific Chemical and Fertilizer Co.

Last December, Murphy offered to buy 60,000 shares of the company's stock. He owned 40,000 of the 188,000 shares outstanding at that time. Exact number of shares he purchased has not been reported by Murphy.

Murphy's executive vice-president at Aloha Motors, Robert C. Ching, and his lawyer, Vernon O. Bortz, have been installed on the board of directors, cut from nine to five members.

Ronald Q. Smith continues as president; J. S. Williamson, vice

president; G. A. W. Hart, treasurer. Bortz was installed as secretary.

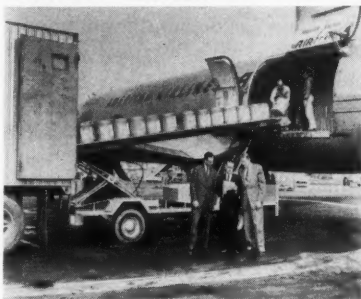
Smith reports total sales of \$20.9 million in 1959, compared with \$21.6 million in 1958; net income of \$554,103, compared with a \$52,434 loss the previous year.

PHILLIPS 1959 INCOME REACHES NEW HIGH LEVEL

A 24 per cent increase brought Phillips Petroleum Co.'s net income to a new high of \$104,639,400 or \$3.05 a share in 1959, stockholders were told in the company's recently issued annual report.

Phillips income from chemicals "is increasing and is expected to provide a growing proportion of the company's earnings." Sales gains of approximately 20 per cent or more were shown for ammonia fertilizers, synthetic rubber and fiber materials and carbon black.

AMERICAN CYANAMID "AIRLIFTS" THIMET



Thimet shipment is transferred from plane to truck at Los Angeles for transportation to Imperial Valley sugar beet area. In foreground: T. J. Lane of American Airlines, Paul J. Ryan of Holly Sugar Corp., and Hamilton Clark, American Cyanamid.

A cross-country "airlift" shipment of over 12 tons of Thimet insecticide was made late in March via an American Airlines Airfreighter.

American Cyanamid Co., manufacturer of Thimet, ordered the air shipment in response to urgent requests from Imperial Valley sugar beet growers. The product has been in limited supply since its recent registration by USDA for application on sugar beet plants.

HOOKER MOVES

Hooker Chemical Corp.'s corporate headquarters, New York district sales offices and export sales department are now located at 666 Fifth Ave., New York 19, N. Y. New telephone: PLaza 7-9600.

SIX FC MAKERS DISPLAY PRODUCTS AT DUTCH EXHIBIT

Six manufacturers of pesticides and/or fertilizers are now exhibiting their products at the first U. S. exhibition in an international horticultural exposition abroad. The U. S. Exhibit at the Dutch Floriade, 125-acre world's fair of gardening in Rotterdam, opened March 25 and will run through the summer for a full six months, ending Sept. 25. It is expected to be viewed by millions of visitors from every part of the globe.

Manufacturers exhibiting their products include DuPont Co., California Spray-Chemical Corp., Union Carbide Chemicals Co., Boyle-Midway, Ra-Pid-Gro Corp. and Stadler Fertilizer Co.

WEATHER CAUSES PESSIMISM IN INTERMOUNTAIN AREA

March roared through the midpoint in the Intermountain Area leaving producers of commercial fertilizers blue and somewhat down at the mouth.

What was originally forecast as a banner season in 1960 may prove a dud unless there is a sudden break in the weather. Until mid-March, ground had been either covered with snow or too wet for application of fertilizers.

"Ordinarily our phone is ringing off the wall at this time of year," reported one Salt Lake sales manager. "Now we're 75 to 80 per cent behind a year ago at this time in sales and sales commitments."

Greatly disturbed by the reversal in prospects are producers of phosphates, nitrogen compounds, potash and blends—indeed, the whole industry.

SNELL ACQUIRES ITS THIRD LAB IN THREE YEARS

Acquisition of Sperling Laboratories of Arlington, Va., has been announced by Foster D. Snell, Inc.

Sperling Laboratories was founded in 1956 by Dr. Frederick Sperling, formerly with the National Institutes of Health and USDA, where he served as head of USDA's pharmacology laboratory in Beltsville, Md., operating under the Federal Insecticide, Fungicide and Rodenticide Act.

NEWS OF THE INDUSTRY

TOLERANCES ESTABLISHED FOR TEDION MITICIDE ON DECIDUOUS FRUITS



Agricultural and chemical editors heard Lloyd Coster, manager of the Technical Chemicals Dept. of Niagara Chemical Div., Food Machinery and Chemical Corp., report on market potential of Tedion miticide at a press conference in April.

The Food and Drug Administration has established tolerances for Tedion miticide and USDA has approved its use on eleven deciduous fruits, it was announced recently by Stuart Bear, manager of the Niagara Chemical Div. of Food Machinery and Chemical Corp.

With the new approvals, Tedion can be used to control essentially the complete mite complex, Niagara said. Previously, applications could be made only up until petal fall which, for the most part, limited its control to early-appearing European red mite. Now treatments can be made when fruit is present on the trees to control summer mites—two-spotted spider mite, McDaniel mite, canadensis mite and carpini mite.

A tolerance of 5 ppm of Tedion has been established for apples, crab apples, pears, quinces, plums, prunes, grapes, apricots, cherries, peaches and nectarines. Earlier this year it was granted registration for use on citrus.

COLLIER SULFURIC ACID PLANT UNDER CONSTRUCTION

Collier Carbon and Chemical Corp. reports that construction has commenced on its new sulfuric acid plant near Wilmington in the Los Angeles Harbor area.

The plant will produce 250 tons of sulfuric acid per day, utilizing spent alkylation acid, hydrogen sulfide and sulfur as raw materials.

C. F. Braun & Co. will construct

the plant and design and erect all off-site facilities. Engineered equipment based on the Leonard-Monsanto process design will be partially provided by the Leonard Construction Co.

Its plans to build an ammonium sulfate plant at the same location have been postponed, Collier said. Instead, Filtrol Corp. will convert Collier raw materials into ammonium sulfate which Collier will market under its trade name, Brea Brand fertilizers.

IMPROVEMENT NOTED IN NH₃ SUPPLY, STORAGE FACILITIES

Ammonia supplies and storage facilities in the nation's major farming areas seem to have improved considerably over a year ago, according to Jack F. Criswell, executive vice president of the Agricultural Ammonia Institute.

"It is well that they have," he added, "since late cold weather has held back field work in many areas and the demand for ammonia will come with a rush when it starts."

Both producers and distributors anticipate better ammonia volume than last year, Criswell said, and applicator sales have been brisk, defying a softening trend noted in some segments of the farm machinery market this spring.

SPENCER CHEMICAL NAMES DISTRIBUTORS FOR CARBYNE

Distributors in the western United States for Carbyne, new wild oat herbicide, have been named by Spencer Chemical Co.

States and distributors are: Montana—Montana Flour Mills, Inc., Chipman Chemical Co., and AGSCO, Inc.; Colorado and Wyoming—Selco Supply Co.; Idaho, Oregon, and Washington—Miller Products Co. and Chipman Chemical Co.; and Utah—Chipman Chemical Co.

In addition to these states, sales in the north-central states will be handled by F. H. Peavey and Co. and AGSCO.

Sales of Carbyne will be made on a limited basis this spring. Approval has been granted by USDA for trial use of the new chemical on spring wheat, barley and sugar beets.

DUPONT SALES TOP TWO-BILLION MARK

Sales of DuPont Co. advanced 16 per cent in 1959 over 1958 and established a record for the company of \$2,114 million, passing the two-billion mark for the first time.

Crawford H. Greenewalt, president, in his annual report to stockholders, also disclosed that the company's index of selling prices averaged about one per cent lower than in 1958.

Earnings, after taxes, were \$8.92 per share of common stock, compared with \$7.25 for 1958, including \$2.54 from General Motors dividends in each year.

HOOKER SALES & INCOME FOR FIRST QUARTER

Hooker Chemical Corp.'s statement of consolidated income for the three months ended Feb. 29, 1960 shows net sales of \$36,192,400, compared with \$34,898,000 for the corresponding first period of last year, ended Feb. 28.

Subject to year-end audit, net income was \$2,991,600 for the first quarter compared with \$3,198,500 for the same period of 1959.

Board Chairman R. Lindley Murray and President Thomas E. Moffitt attributed the decline in earnings to several factors, including increased emphasis and expenditures on research and development, increased labor and purchased materials costs, and slightly lower average selling prices.

FMC CHEMICALS COMPLETES PRINCETON CENTER

Food Machinery and Chemical Corp.'s Chemical Research & Development Center at Princeton, N. J., has been completed on schedule and is now fully staffed, Dr. Carl F. Prutton, executive vice president, reports.

In addition to research personnel, the center houses inorganic product application and sales service groups formerly associated with FMC's Becco Chemical, Chlor-Alkali and Mineral Products Divisions, as well as the Chemical Patent Dept.

An organic group performs research and development assignments for the Niagara Chemical and the Chemicals & Plastics Divisions.

Good News to the "Farm Chem" Trade:

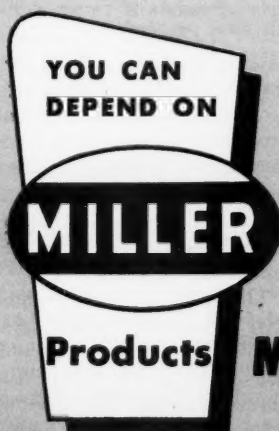
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NEWS OF THE INDUSTRY

SAN FRANCISCO CHEMICAL BUILDS BENEFICIATION PLANT

A big boost in electrical energy looms for development of the hundreds of millions of tons of low grade phosphate ore in the Humphreys deposit 12 miles north of Vernal, Utah.

The Utah Power & Light Co. has announced it will build a \$2,350,000 high voltage transmission line from Carbon County in the southern part of the state north to Vernal.

The contemplated power boost ties in with San Francisco Chemical Company's announcement of an immediate start on the first unit of a beneficiation facility to process the Humphreys deposit ore.

Initially, the phosphorite concentrates will move to the Garfield (near Salt Lake City) plant of Western Phosphates, Inc., a facility which turns out around 110,000 tons annually of phosphatic fertilizer.

San Francisco is 50 per cent owned by Stauffer Chemical Co., which also owns 50 per cent of Western Phosphates. No expansion of fertilizer facilities is contemplated at Garfield, however. Instead, Stauffer or Western would ultimately construct a 100,000-ton-a-year high analysis phosphate fertilizer plant in the Vernal area.

This would be followed by erection of electric furnaces with 72,000 kw rating for production of elemental phosphorus. The new high voltage line would serve the immediate power loads previously energized by an isolated diesel-electric plant of Utah Power at Vernal, plus the new beneficiation facilities announced by San Francisco.

San Francisco Chemical only a year ago exercised option to acquire the Humphreys deposit.

San Francisco said that for the present the phosphate concentrates from its facility near Vernal would be carried by aluminum trailer trucks to the Garfield plant.

Western Knapp Engineering Co., San Francisco, started construction of the first of what will be six units of the crushing and beneficiation unit last month. Completion is scheduled by this fall.

Ultimately it is proposed that one million tons a year of phosphate

concentrates would be produced at six units of the beneficiation plant.

The possibility also was reported that San Francisco would move most of its major management force from Montpelier, Idaho, to Vernal with the opening of the tremendous new open cut mine at the Humphreys deposit.

NORTHWEST NITRO-CHEM. LOSS REDUCED IN 1959

Northwest Nitro-Chemicals Ltd. unaudited net loss for 1959 totaled \$857,000, compared with a loss of \$1,247,000 in 1958, according to the annual report of Commercial Solvents Corp.

To curtail losses which have persisted since start-up of operations late in 1956, a number of management, marketing and financial changes have been made at Northwest, the report says. Revision in marketing methods brought about encouraging sales improvement as the 1959-60 fertilizer season opened.

On Dec. 31, 1959, Commercial Solvents investment in the Canadian firm consisted of 52.7 per cent of outstanding common stock, 83.4 per cent of preferred stock and \$1 million of 5½% subordinate income debentures, due in 1965.

The *Financial Post*, Toronto, reported that following default by Northwest on part of the payments due on first mortgage bonds on June 30, 1959, provision was made (subject to court approval) for certain changes in capitalization and readjustment of certain obligations. Among them was cancellation of the management agreement with Commercial Solvents. CSC's common stock holdings in Northwest will be reduced from 52.7 to 45.1 per cent under the proposed agreement. It will continue to participate actively in Northwest's affairs.

Net profit of Commercial Solvents reached \$2.8 million in 1959, up sharply from \$1.4 million the year before.

WARFARIN PRODUCTION BEGINS IN CANADA

Arrangements have been completed for the manufacture of warfarin in Canada, and commercial production is already under

way, according to an announcement by Ward Ross, managing director of the Wisconsin Alumni Research Foundation, holders of the warfarin patents.

The new warfarin source at Vancouver, B.C. will supply the compound to formulators of warfarin-based products, both in the rodenticide and pharmaceutical fields throughout Canada.

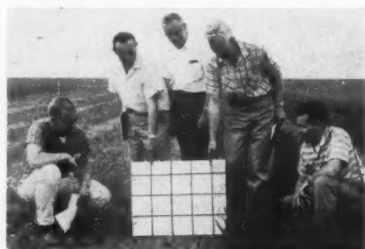
BUNKER HILL PLANT TO BE COMPLETED BY JULY

Target date for completion of Bunker Hill Co.'s new \$2 million phosphoric acid plant west of Kellogg, Idaho, is July 1.

Main processing building is 65 feet high, 72 feet long and 70 feet wide. The concrete silo for phosphate rock storage is 60 feet high, 35 feet in diameter. Three acid storage tanks will hold 150,000 gallons each.

Associations Meetings

AT FRESNO DEMONSTRATION



George Nelson, Best Fertilizers; Bill Fischer, Fresno county farm advisor; Milton R. Johnson, Balfour-Guthrie Co.; Dr. Bert Krantz, Extension soils specialist, Univ. of Calif.; and Keith M. Rathbone, Niagara Chem. Div., FMC. Greater growth from nitrogen plus phosphate is shown at right. N alone was used at left.

About 50 growers and fertilizer industry representatives attended the Fresno County Agricultural Extension Service Demonstration of nitrogen and phosphate fertilization of irrigated barley recently, reports Richard B. Bahme, western regional director of the National Plant Food Institute.

"The irrigated barley showed a better response to nitrogen and phosphate fertilizers in combination, as compared to the nitrogen when used alone," Dr. Bahme said. Barley which had not been fertilized with phosphate appeared

yellow and stunted, resembling what has been thought to be lack of nitrogen. However, all plots had been treated with 80 pounds of nitrogen, Dr. Bahme said.

Bill Fischer, farm advisor for Fresno county, conducted the demonstration.

MONTANA SOIL FERTILITY PLAN GETS BIG SEND-OFF



A fertilizer dollar bill is center of discussion among a few of the 85 people attending the Kick-off banquet. Left to right: Doug Jamison, Cominco Products Inc.; F. Todd Tremblay, NPFI; Stan Halvorson, Equity Supply Co. and Walt Mauritson, county extension agent.

An accelerated soil fertility program which would put an estimated \$1.5 million more dollars in Flat-head County farmers' pockets got an enthusiastic send-off at a Flat-head Agricultural Council meeting March 8. The Kick-off banquet is the first phase in an intensified soil fertility program that is being sponsored jointly by the Montana State College Extension Service and the National Plant Food Institute. Walt Mauritson, county extension agent, and Bernard L. Brown, soils extension specialist, are leaders of the program.

F. Todd Tremblay, Pacific Northwest regional director for NPFI, told the 85 persons attending that gross income in the county could be raised from the \$4.1 million total in 1959 to \$5.6 million this year if an adequate fertilizer program is followed.

A concentrated soil fertility campaign was conducted in the county for a week starting April 10.

INSTRUMENT-AUTOMATION CONFERENCE THIS MONTH

Subjects ranging from air pollution and the instruments used to determine its nature and extent to the proper specification and use of control valves in industrial processes will be discussed during a conference in San Francisco May

9 through 12. It is the Summer Instrument-Automation Conference and Exhibit, being held under the auspices of the Instrument Society of America in San Francisco's Civic Auditorium and Brooks Hall.

About 25 technical sessions will be held and some 60 papers delivered by instrumentation authorities.

N.C. FORAGE FERTILIZATION DEMONSTRATION CONTINUES

A large scale forage crop fertilization demonstration project is being continued for another year in North Carolina. Initiated in the fall of 1958, the project is supervised by Sam H. Dobson and Carl Blake, Extension pasture specialists with the North Carolina Agricultural Extension Service.

This project is supported by an annual grant of \$2,500 from the National Plant Food Institute.

MACA ELECTS OFFICERS

The Mid-West Agricultural Chemical Assn. recently held its first election in Omaha, Neb. Robert Yapp of California Spray-Chemical Corp. was elected president. Vice president is Herbert Woodbury, Woodbury Chemical Co., and secretary-treasurer, G. E. Zackert, Imperial Chemical Co. The board of directors is composed of the above officers, Harold Howard of Thompson-Hayward Chemical Co. and Porter L. Williams of Stauffer Chemical Co.

MACA was organized in 1959 to work with Mid-west college experimental stations and the extension service of USDA. The association has a planned program of education and promotion for improved use of herbicides, pesticides and other farm chemicals. It reports that cooperation with the National Agricultural Chemicals Association is planned.

Calendar

May 3. Agri-Business Day and National Plant Food Institute Grower Awards, Colorado State University, Ft. Collins.

May 12-14. American Institute of Chemists Annual Meeting, Radisson Hotel, Minneapolis, Minn.

May 16-18. Midyear Meeting, Chemical Specialties Manufacturers Assn., Drake Hotel, Chicago, Ill.

May 17-18. Chemical Market Research Assn. Annual Spring Meeting, Biltmore Hotel, New York City.

May 20. Vegetable Crop Field Day, University of California, Davis.

June 9-11. Manufacturing Chemists' Association Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va.

June 12-15. National Plant Food Institute Annual Meeting, Th Greenbrier, White Sulphur Springs, W. Va.

June 13-16. Western Society of Soil Science meeting, University of Oregon, Eugene.

June 21-22. Association of Southern Feed and Fertilizer Control Officials annual meeting, Riverside Hotel, Gatlinburg, Tenn.

June 27-29. Entomological Society of America, Pacific Branch, meeting, Davenport Hotel, Spokane, Wash.

June 27-29. Northwest Section, American Society of Range Management, Summer Meeting, John Day, Ore.

July 13-15. Pacific Northwest Fertilizer Conference, Hotel Utah, Salt Lake City.

July 27-30. Southwest Fertilizer Conference and Grade Hearing, Gal-

vez Hotel, Galveston, Tex.

Aug. 2-3. Ohio Pesticide Institute Meeting, Ohio Agricultural Experiment Station, Wooster, Ohio.

Aug. 21-25. Canadian Fertilizer Association Annual Convention, Manoir Richelieu Hotel, Murray Bay, Quebec, Canada.

August 25-27. Mississippi Soil Fertility & Plant Food Council 1960 meeting, Buena Vista Hotel, Biloxi, Mississippi.

Sept. 24-26. Western Agricultural Chemicals Association 31st Annual Meeting, Palm Springs Riviera Hotel, Palm Springs, Calif.

Sept. 27-29. National Agricultural Chemicals Association Annual Meeting, Hotel del Coronado, Coronado, Calif.

Sept. 29-30. Northeast Fertilizer Conference, Hotel Hershey, Hershey, Pa.

Oct. 5-6. Southeast Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Oct. 17-18. National Safety Council, Fertilizer Section, National Safety Congress, Chicago, Ill.

Nov. 2-4. Fertilizer Industry Round Table, The Mayflower, Washington, D. C.

Nov. 3-4. Annual Convention, Pacific Northwest Plant Food Assn., Boise, Idaho.

Nov. 9-11. National Fertilizer Solutions Association, Peabody Hotel, Memphis, Tenn.

Nov. 13-15. 37th Annual California Fertilizer Association Convention, del Coronado Hotel, Coronado, Calif.

NEWS OF THE INDUSTRY

OSTERLI DISCUSSES BULK HANDLING OF FERTILIZERS AT CALIF. FIELD DAY

Bulk handling of dry fertilizer, which is increasingly common among dealers and handlers, might also be a time and money saver to farmers. This suggestion was recently put to growers attending the University of California Imperial Valley Field Station field day near El Centro.

Agriculturist Victor P. Osterli, Davis, said University of California studies have shown costs of bulk handling are not out of line for larger users of fertilizers.

Bulk handling can be done with three principal pieces of equipment, Osterli said: A flow bin or tote box, an auger or belt type conveyor and a drop spreader.

Costs for owning and using this equipment depend mainly on the tonnage handled, he added. A Davis study arrived at cost figures on the basis of an estimated five-year life for equipment, with five per cent of the original cost going toward maintenance and operation. Labor and tractor use were each figured at \$1.30 per hour.

A small operator, treating 25 acres with 400 pounds per acre, would find his bulk handling costs \$4.60 per acre, Osterli said. As the size of operation increases to 100 acres, the per-acre cost drops to \$1.50.

Here's one type of flow bin or tote box used for dispensing fertilizer after it has been truck-hauled from dealer to place of use on the farm. Osterli shows how it empties into conventional drop-type broadcast spreader used for application of dry fertilizer materials as preplant application on crops such as alfalfa on rangelands.



People

Allied Chemical Corp. George A. Benington, vice president—advertising and trade relations, retired in April after 47 years in industry. Benington has been with W. R. Grace, Bowker Chemical Co., American Agricultural Chemical Co., and Mutual Chemical Co., which was acquired by Allied Chemical in 1954. He was named Allied Chemical vice president—marketing—in 1957.

The American Agricultural Chemical Co., PURCHASING DEPT.: Leonard Engel, former assistant purchasing manager, becomes manager of the department. He joined the AAC purchasing department in 1914. Irving C. Keller has been named assistant manager.



Engel



Martin

PRODUCTION staff changes: H. L. Martin, Jr., former general maintenance superintendent, was named

manager of the Engineering and Construction Div., replacing Roy Simm who retired after 45 years service with the company. Allen Jaeggi was named assistant manager of the division.

S. D. Ward becomes assistant general superintendent for fertilizer production. A. F. Vetter was named maintenance superintendent and E. M. Foster becomes assistant superintendent at the Cleveland plant.



Spencer



DeHaan

Norman F. Spencer has been named a regional agronomist and will be located at Agrico's Fulton, Ill. office. He replaces J. D. DeHaan, who has been named director of sales promotion and training for the company.

Also announced was appointment of Walter Bartz as special assistant to Comptroller W. H. Hildebrandt, and of George J. Wilson as legal counsel.

American Potash & Chemi-

KANSAS PLANT FOOD COUNCIL MEMBERS



Members of the recently organized Kansas Plant Food Council are pictured above: Seated, Tom Hruza, Allied Chemical Corp.; Dr. Floyd Smith, Kansas State Univ.; A. H. Stephenson, Consumers Cooperative, chairman; Robert M. Easley, Olin Mathieson Chemical Corp., secretary; and Arlan D. Woltemath, National Plant Food Institute. Standing: R. V. Olson and E. A. Cleavinger, Kansas State University; Robert Guntert, Kansas State Board of Agriculture; George Wickstrom, American Potash Institute; D. R. McHard, Kaw Fertilizer Service; F. L. Douthit, Davison Chemical Co.; and Dr. Robert Bohannon, Kansas State University.

cal Corp. Frederick B. Adams, Jr., director of the Pierpont Morgan Library at New York since 1948, has been elected a member of the American Potash & Chemical Corp. board of directors.

T. A. Jonas moves up from the post of Washington representative to manager, Washington office.

Armour Agricultural Chemical Co.



Manderson

Marion C. Manderson has been appointed technical director, Nitrogen-Phosphate Div. Before his appointment, he was with Arthur D. Little, specializing in technical economic studies in the chemical process industries.

Armour & Co. Ralph H. Potts, who developed the first commercial plant for production of nitriles and amines from fatty acids, was awarded the Alton E. Bailey medal by the North Central Section, American Oil Chemists Society.

Atlas Powder Co. has announced election of Max E. Colson, a vice president and general manager of the Explosives Div., and Edward J. Massaglia, a vice president and general manager of the Chemicals Div., to its board of directors.

Bonneville, Ltd. Quincy A. Shaw, Jr. has been named president. He succeeds Lockwood W. Ferris, who resigned several months ago.

Central Chemical Corp.

Robert B. Troxel is named sales manager for the Home and Garden Div. of Central Chemical. He has been in fertilizer-chemical sales since World War II.



Troxel

Chemagro Corp. appointments: W. H. Bricker as technical

MAY, 1960



Bricker



Metzen

field representative for the central region; John Metzen as sales representative in the St. Joseph, Mich., area.

Formerly Bricker was St. Joseph, Mich., sales representative. He will now make his headquarters at the company's regional office in St. Louis. Metzen had been sales manager for Haviland Agricultural Chemical Co.

Diamond Alkali Co. Albert DiDario joins the company as

biologist, agricultural chemicals, product development section, research department, Painesville, O. DiDario had been with The Oliver Corp. as entomologist.

Elanco Products Co., a recently formed division of Eli Lilly and Co., announces appointment of O. B. Swearingen as vice-president of agricultural products marketing. Swearingen joined Lilly in 1934. His latest position was director of sales in the Lilly agricultural and industrial products division.

Food Machinery and Chemical Corp. has named D. Stewart Quern to the new post of senior sales coordinator in the southern territory for FMC's Chemical Divisions. Dr. Desmond M. C. Reilly, chemical advertising and publicity manager, has been named president of the National Uni-

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NEWS OF THE INDUSTRY

versity of Ireland Club of New York.

Hayes-Sammons Chemical Co. reports promotion of A. N. "Andy" White and Harold W. Dube. White has been named general sales manager of all H-S companies, and Dube becomes general manager of the Dixie Div. at Indianola, Miss., replacing White.

Hooker Chemical Corp. James G. Baldwin joined the firm April 1 as general manager, Western Chemical Div. Russell O. Vognild becomes division sales manager.

Horace Hooker, former Western Chemical Div. sales manager, will move East to the company's new corporation headquarters in New York City to assume new corporate duties.

Dr. LeGear, Inc. The Board of Directors has elected Frank Seeland president. Former president, Dr. Daniel H. LeGear, is retiring for reasons of ill health.

Seeland will continue as vice president in charge of the Farm Chemical & Insecticide Div. of S. B. Penick & Co., which last November acquired controlling interest in Dr. LeGear, Inc.

University of Minnesota. Prof. C. E. Mickel, head of the department of entomology and economic zoology at the University since 1944, will retire in June.

Monsanto Chemical Co. Charles H. Sommer has been elected president, and Charles Allen Thomas chairman of the board of directors. The election occurred at the regular meeting of the board, following the company's 58th annual meeting in March. Thomas had been president, and Sommer had been executive vice president.

Edward F. Lynch Jr. has been appointed to the newly created position of manager of distributor relations for Monsanto in its Marketing Services Dept.

National Safety Council has named Jerome T. Siedlecki director of industrial hygiene and staff representative for the chemical section.

Nitrogen Div., Allied Chemical Corp. William H. Van Beck has been appointed a vice president.



Van Beck

Also division comptroller, Van Beck will assist the president on administrative and financial matters. The new vice president started his career with Allied Chemical in 1931 as an accounting clerk.

Eugene L. Heintz and Richard L. Nelson have been appointed sales representatives by Nitrogen Div. Heintz, a former county extension director in Muscatine County, will cover the West Central Illinois sales territory. Nelson will supervise the northern Illinois sales territory.

Pennsalt Chemicals Corp. reports that Hugh C. Land, former general manager of the Industrial Chemicals Div., has been elected a vice president.

Upon the retirement of Fred C. Shanaman as group vice-president, West, on April 27, Land succeeded him, and is making his headquarters at Tacoma, Wash.



Shanaman

Land will have jurisdiction over the two Western operating divisions, Agricultural Chemicals and Industrial Chemicals-West.



Watson

J. Drake Watson has been appointed general manager of the Agricultural Chemicals Div., with headquarters at Tacoma, Wash. Watson had been administrative assistant to the president of the former Pennsalt of Washington Div. and handled their export sales.

Potash Co. of America. Paul C. Ausley died on March 31.

Rutgers University. An informal dinner will be held May 26 honoring Dr. William Martin, soon to retire as director of the Agricultural Experiment Station at Rutgers.

Spencer Chemical Co. The



Gray

board of directors has elected a new director, Ralph L. Gray, chairman of the Armco Steel Corp., to fill the vacancy created by the death of Kenneth A. Spencer, chairman of the board and founder of the company, who died Feb. 19. The board also named the company president, John C. Denton, as chief executive officer, and C. Y. Thomas, formerly vice-chairman of the board, was elected chairman.

Stauffer Chemical Co., Agricultural Chemicals Div. Newly appointed sales supervisor for the Los Angeles area is Thomas J. McCaffrey. He formerly was administrative assistant to the regional sales manager.

Texaco Inc. Albert Benjamin has been named director of public relations. Before joining Texaco, Benjamin served as editor and corporate public relations specialist in the magazine and newspaper publishing field.

U. S. Industrial Chemicals Co., Div. of National Distillers and Chemical Corp. Clifford E. Oman has just been named assistant to the director of production. At the time of his appointment, Oman was Tuscola general manager.



Oman



Smith

FARM CHEMICALS

James R. Smith, plant manager, now assumes full responsibility for Tuscola plant operations.

Smith had been plant manager of USI's Caustic-Chlorine plant at Huntsville, Ala., from 1951 to 1957.

Velsicol Chemical Corp. has appointed Chris P. Gicas and Louis H. Mehalek to the company's Chlordane insecticide marketing staff. Gicas was named chlordane marketing specialist in the Southeast U.S. A graduate of the University of Wisconsin, he had been with Helene Curtis Industries. Mehalek was named chlordane marketing specialist responsible for Ohio and Michigan. He attended Utah State and the University of Illinois and was employed by Stewart Warner Corp.



Mehalek



Gicas



Bless

Emil F. Bless joins Velsicol as sales representative for the Agricultural Chemicals Div., responsible for sales and technical service in the states of Alabama and Georgia and north-west Florida. Bless had been a county agricultural extension agent in Kentucky.

Witco Chemical Co., Inc. has promoted Graham Barker to assistant product sales manager for the Emcol line. He will assist Arthur O. Raven, Emcol product sales manager. Before his promotion, Barker was with Witco's eastern regional sales department.

Woodward & Dickerson has announced the appointments of H. A. C. Rauchfuss as chairman of the board and C. Earl Gettinger as president.

MAY, 1960

Government

USDA SCIENTISTS ISOLATE GYPSY MOTH ATTRACTANT

Increased effectiveness in controlling gypsy moths may result from the isolation and partial identification of a natural attractant found in female moths, USDA scientists report. A crude form of this substance is used to lure male moths into traps in order to locate infestations and determine control requirements.

Martin Jacobson, chemist of USDA's Agricultural Research Service, told the 137th National American Chemical Society meeting at Cleveland, Ohio, in April, that he and his co-workers have collected and purified a single drop of the attractant. This minute quantity was obtained from the bodies of more than a half a million female gypsy moths.

Chemical analysis of the substance, now underway at the Agricultural Research Center, Beltsville, Md., will lead to the making of a far more readily available synthetic lure, scientists believe.

BENSON ISSUES STATEMENT ON CHEMICALS AND CROPS

"We cannot continue to produce adequate amounts of safe and wholesome foods without chemicals," said Secretary of Agriculture Ezra Taft Benson in a recent statement issued by USDA.

Benson pointed out that government takes the responsibility for seeing that the chemicals used are carefully controlled and that better chemicals and methods are developed.

"Abandoning their use on farms and in the food industry would result in an immediate decline in the quantity and overall quality of our food supply and cause a rapid rise in food prices paid by consumers," he said.

1960 INSECTICIDE RECOMMENDATIONS ISSUED

The 1960 revision of its handbook on insecticide recommendations has been issued by USDA.

Single copies of "Insecticide Recommendations of the Entomology Research Division for the Control of Insects Attacking Crops

and Livestock" (AH 120) may be obtained for 65 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.

Chemicals

IMC OFFERS RESEARCH QUANTITIES OF NEW CHLORO COMPOUNDS

New, low-cost chloro compounds with reactivity characteristics similar to benzyl chloride are being offered free in research quantities of one pound or more by International Minerals & Chemical Corp.

The four compounds—monochloromethyl alkylbenzenes, bis (chloromethyl) alkylbenzenes, chloromethyl methylnaphthalenes, and polychloro methylnaphthalenes—are particularly attractive intermediates, IMC reports. They have a higher molecular weight, lower volatility and 30 to 200 per cent lower cost than benzyl chloride, a,a'-dichloro-p-xylene or a-chloro-p-xylene.

IMC foresees applications of the new chloro compounds in herbicides, fungicides, plasticizers, functional fluids, cosmetics, textiles, and many other products.

Requests for free samples should go to Research, Engineering and Development Div., International Minerals and Chemical Corp., Skokie, Ill.

NEW BULLETIN FROM HODAG CHEMICAL

A new bulletin describing the applications and tabulating the properties of 37 representative non-ionic surface active chemicals has been published by Hodag Chemical Corp.

The products are divided into four groups: glycerol esters, other polyhydric alcohol esters, polyglycol esters and polyoxyethylene alkyl aryl ethers. Hodag's technical services laboratory is prepared to assist users in the application of nonionics.

Copies are available by
CIRCLING 161 ON SERVICE CARD

FDA, USDA APPROVALS

Thimet, a systemic insecticide, has been accepted by USDA for use in control of sugar beet leafhoppers and mites. The approved

NEWS OF THE INDUSTRY

claim states that Thimet phorate 10 per cent granular can be applied to sugar beets at time of seeding at the rate of ten pounds per acre by broadcast or drill application. Thimet controls leafhoppers and mites four to six weeks after the seedlings emerge.

FDA has granted a residue tolerance for **maleic hydrazide**, MH-30, in raw potatoes, potato chips and onions. It was granted a residue tolerance of 15 ppm in onions, 50 ppm in raw potatoes and 160 ppm in potato chips.

COMMERCIAL SOLVENTS ANNOUNCES NEW DRI-SOL

The fertilizer industry's search for low cost water-free nitrogen solutions has ended in success, reports Commercial Solvents Corp., with introduction of its new Dri-Sol line of ammoniating solutions. The company said that water content of its Dri-Sol solutions is one-half of one per cent.

Made for use by fertilizer manufacturers in preparation of mixed plant foods, Dri-Sol solutions are

available in grades ranging from 24 per cent ammonia and 76 per cent ammonium nitrate to equal parts of each.

Among the advantages claimed for the new solutions are lower cost and more efficient production. According to Loy A. Everett, manager of CSC's Agricultural Chemicals Sales Dept., the elimination of "expensive water" reduces shipping costs and does away with troublesome and expensive production stoppages which result from the presence of more water than the processes involved can handle.

ALCO INTRODUCES "VULCANOL" MULCH

A new elastomeric spray mulch has been introduced by Alco Oil & Chemical Corp. Called "Vulcanol," the mulch is reported to effect low cost soil erosion control and speed seed germination.

Alco reports that the material is effective for use along highways and landscapes, fruit groves, farm areas and parks. For details

CIRCLE 162 ON SERVICE CARD

Equipment Supplies

BULK MATERIAL HAULER ADDED TO HIGHWAY LINE



An expansion of its line has been announced by Highway Equipment Co. with addition of the Model C bulk material hauler. The Model C, Highway reports, can be used for transporting and unloading virtually all materials of fine granular consistency, such as flake gypsum, pulverized lime, superphosphate, etc.

Four different body lengths are available—8-foot, 11-foot, 13-foot and 15-foot—with capacities from 50 to 80 barrels. Additional information can be obtained by

CIRCLING 163 ON SERVICE CARD

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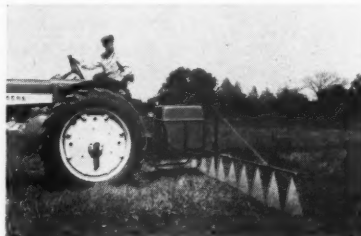
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TRAK-PAK SPRAYER UNIT INTRODUCED BY HANSON



Back-up, hook-up and you're ready to spray with the new tractor-mounted Trak-Pak sprayer unit, reports Hanson Equipment Co. Designed to save time and reduce work during the rush of the growing season, the unit mounts on any standard 3-point hydraulic hitch and can be attached or detached from the tractor in minutes.

The Trak-Pak can be equipped with either a boom or a Brodjet sprayer, and is available with a choice of piston-type or nylon-roller-type pumps.

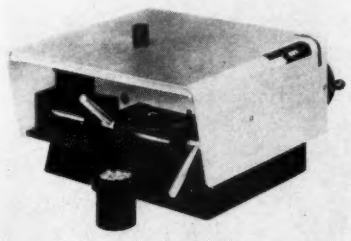
Complete information is available by

CIRCLING 164 ON SERVICE CARD

NEW PRODUCT DETERMINES TRUE VOLUME, SAYS H.I.C.

A recent invention has resulted in a new product to determine true volume as well as density, specific gravity or porosity of solid materials, reports Houston Instrument Corp.

Based upon the principle that two closed systems of air at the same pressure and temperature will have identical *specific* volumes,



the invention allows direct digital indication of the true or absolute volume of any solid substance with a one-minute procedure.

The instrument is designed for field, lab or plant use. For complete information

CIRCLE 165 ON SERVICE CARD

REMOVING TRAMP IRON

A new Cesco magnetic trap for detection and removal of tramp iron from liquids and slurries in fluid lines is now available from Cesco. It features a quick-release clamp that permits detachment of the base plate in seconds, to speed cleaning and maintenance.

Called the Cesco 'Quick Clamp' sanitary magnetic trap, the model includes a circular base plate in place of the previous rectangular plate, and a snap-open/snap-close clamp in place of the previous four screw attachments.

Complete information, specifications and capacity tables can be found in a bulletin, available by

CIRCLING 166 ON SERVICE CARD

BOOM KIT BY HAHN

A new 6-row boom kit, Model 640-E, has been introduced by Hahn, Inc. Specially designed for application of liquid fertilizers, it features a strong aluminized-steel pipe. Hahn reports that the boom kit can be used with its trailer and tractor mounted sprayers, and other type tractor sprayers.

For further information

CIRCLE 167 ON SERVICE CARD

Suppliers Briefs

American Metal Climax, Inc.
Headquarters office personnel have occupied space in a modern building bearing the company name at 1270 Avenue of the Americas in Rockefeller Center. The company reports that for the first time since its formation at the close of 1957 by merger of American Metal Co., Ltd. and Climax Molybdenum Co., company executive management and its staff personnel are under one roof.

C. O. Bartlett & Snow Co.
Claude J. Neville, former executive vice president and treasurer, has been elected president and general manager. John R. Hersey was elected vice president and treasurer; and F. W. Neville, purchasing director and assistant secretary.



Neville

Bemis Bro. Bag Co.'s annual report shows 1959 sales of \$131,251,156 and consolidated net income

of \$3,023,354. This represents an 8 per cent increase in sales and a 16 per cent increase in net income as compared with the previous

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NEWS OF THE INDUSTRY

year. Additions to property, plant and equipment in 1959 totaled \$3,853,686—more than double 1958 expenditures.

Dorr-Oliver Inc. Richard M. Sibley joins the International Sales office, responsible for sales of D-O products and services in Venezuela and the Caribbean area.

Highway Equipment Co. Appointment of Clayton M. Porter



Porter

as division manager was announced by Gale E. Allen, general sales manager. Porter will cover Indiana, Ohio, Kentucky, Michigan, West Virginia, Virginia, western Pennsylvania and Garrett and Allegheny counties in Maryland.

International Paper Co. A new division, the Paper-Plastics Div., has been formed to coordinate sales activities in this growing field, reports W. K. Graves, assistant general sales manager. The new division will be headed by J. L. DeRose, division sales manager, who will make his headquarters in the company's executive offices in New York.

Lewis-Shepard Products, Inc. A. L. Lewis and F. J. Shepard, Jr., co-founders of the company, celebrated their 45th year in April as pioneers and active business partners in the manufacturing and

sale of materials handling equipment.

Owens-Illinois Glass Co. John W. Luce has been named assistant



Luce

to Tom W. Brown Jr., division manager of the Multiwall Bag Div. Luce will direct research and new product development. Educated at the University of Illinois and Armour Institute of Technology, he joined Owens-Illinois in 1936.

Richardson Scale Co. has opened a district office at 2425 W. Holcombe, Houston, Tex. Jerry Brice was named manager.

St. Regis Paper Co.'s annual report shows large gains in sales and earnings for 1959. Net sales were \$474,393,134, compared with \$408,626,275 in 1958. Net income for 1959 at \$28,615,519 was equal, after preferred dividends, to \$3.01 per share of common stock, on 9,363,515 shares. This compared with \$21,998,072, equal after preferred dividends to \$2.41 on 8,941,118 shares in 1958.

Schelm Brothers, Inc. Ben J. Titus, Carmel, Ind., has been named a representative for the Fertilizer Equipment Div. He has been with Dos-Gro Corp., U.S. Liquid Corp. and Aylco Fertilizer Corp. His territory includes In-

diana, Michigan and Kentucky.

Dr. Edward M. Meixner, owner of Farm Crop Soil Service, has been appointed distributor for Schelm nitrogen solutions and liquid mixed fertilizer equipment.

Union Bag-Camp Paper Corp.

Lawrence G. Brown becomes director, research and development. Before joining Union-Camp, he was with Scott Paper Co. and, most recently, the Nashua Corp.

In April, Union Bag-Camp Paper Corp. began commercial production of its Uniseal multiwall bags at the Savannah plant. Until then, the heat sealed, liquid and air-tight package had been made only on a pilot plant basis.

West Virginia Pulp and Paper



Glazebrook

Co. has named Kenneth W. Glazebrook as New York district sales manager for multiwall products. He succeeds James A. Munday who is now staff assistant to Sheldon Y. Carnes, northern region manager.

Witco Chemical Co., Inc. Subject to approval of shareholders at the annual meeting May 19, 1960, of an increase in the authorized Common Stock to 2,000,000 shares from the present 1,000,000 shares, the directors have proposed a 50 per cent distribution on common stock.

MONARCH SPRAYS



This is our Fig. 645 Nozzle. Used for Scrubbing Acid Phosphate Gases. Made for "full" or "hollow" cone in brass and "Everdur." We also make "Non-Clog" Nozzles in Brass and Steel, and

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FARM CHEMICALS HANDBOOK

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When the ESA North Central Branch met recently in Milwaukee, one highlight was a panel on problems and responsibilities involved in

CHEMICAL RESIDUES

ABOUT 300 SPECIALISTS in insects, from 12 states and two Canadian provinces met for the 15th Annual conference of the north central branch, Entomological Society of America, at the Schroeder Hotel in Milwaukee, March 23-25.

Insects which damage forest and shade trees, soil and turf, forage crops and fruit crops were discussed in sectional meetings. The highlight of the three day meeting was a panel discussion—with no holds barred—of the residue problem. Panel members represented public health, agriculture, wildlife and medical departments.

The primary target was the Delaney amendment, which requires zero tolerance for any substance known to cause cancer when eaten by men or animals. It was intimated that the FDA should prompt congress to relax controls.

"OUR MOST URGENT PROBLEM"

"Zero tolerance is our most urgent problem", said W. L. Popham, deputy administrator of the agricultural research service of the USDA. "Analytical methods become more sensitive, and zero shifts. There must be a point below which a chemical is safe for use, or it should be banned entirely."

Popham stressed that if farmers and food processors use approved methods and read the chemical labels, consumers can have safe food supplies even if farm producers continue to use millions of tons of chemicals.

He estimated that modern farming uses about 29 million tons of chemical fertilizers a year, plus 500 million pounds of pesticides to kill crop insects and 35 million pounds of herbicides to kill weeds.

Popham, citing the need for increased study of chemicals, used selenium as a trace mineral example. Selenium, he said, is safe at a level of one part per million in a food and can be considered subnormal in a human diet at half that amount, yet toxic in foods if the selenium appears at a 5 parts per million rate.

The responsibility for having the nation's food adequate and also safe, Popham concluded, is a stupendous one. This stretches, he declared, through all phases of farm production, through the work of entomologists, processors, research staffs and the manufacturers of chemicals.

John L. Harvey, Washington, D. C., deputy ad-

ministrator of the Food and Drug Administration, said he saw no chance at all of getting congressmen to vote for any weakening of the public's protection against cancer. FDA, he added, not only was in favor of retaining the Delaney clause but wanted a similar restriction written into pending legislation to regulate food coloring.

"Functions of the U. S. Department of Agriculture," Harvey pointed out, "are to clear the use of chemicals for the safety of farm operators and processors and to issue certificates of usefulness, with recommendations as to use."

"Then it is the function of the FDA to determine tolerances, if any. This is a matter of teamwork between the two agencies."

Harvey declared the FDA actions withdrawing cranberries and hormone-treated caponettes from the markets was not a whimsical act, but declared the food controls were matters of law and duty.

He also reported the federal agency considers a zero tolerance necessary if a food residue or food additive of any strength produces cancer in test animals.

Other panel speakers included Dr. M. R. Zavon of the Kettering Laboratory, Cincinnati; William Jasper, Chicago, assistant commodity director for the American Farm Bureau, and Norman Volk, director of the Purdue University agricultural experiment station.

In an earlier session, between top men of the U. S. Fish and Wildlife Service and the entomological service of the USDA, no great argument developed.

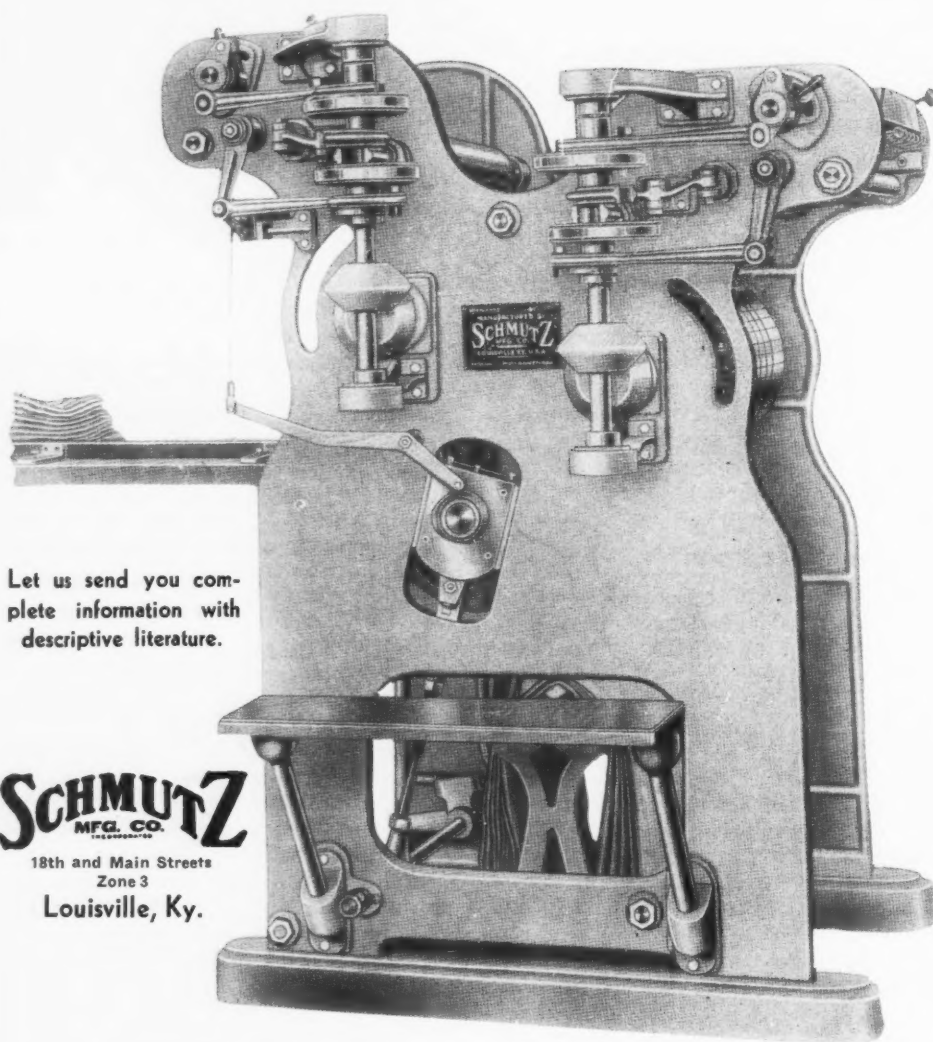
Walter Dykstra, of the U. S. Fish and Wildlife Service, declared insect control is necessary in the future; yet users cannot afford to disregard the side effects on fish and wildlife resources.

BIRD LOVERS DISSATISFIED

In areas of Dutch Elm disease, where many robins were victimized as a result of the DDT control over the Dutch elm beetle, bird lovers voiced their dissatisfaction. C. H. Hoffmann, of USDA entomological research, declared it unduly pessimistic to forecast the doom of the robin. He said that the DDT control over the Dutch Elm beetle can be regulated. This can save trees and avoid the costs of removing dead trees. He pointed out the control program has been necessary in a relatively small area. ▲

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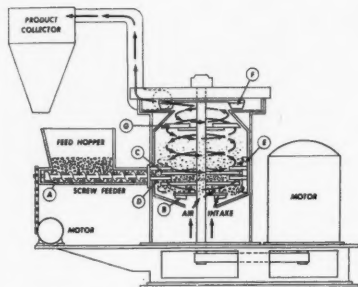
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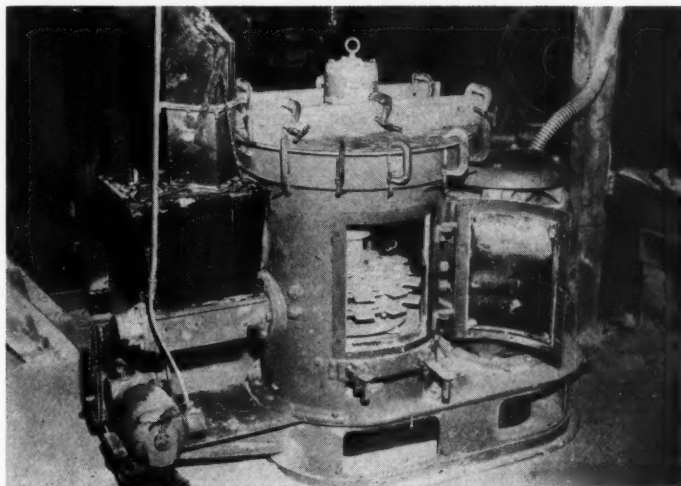
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PRODUCTION METHODS



*Quality Chemical Corporation
utilizes a Pulver-Mill in*



GRINDING PESTICIDES

IN JUNE 1958, a 24" Pulver-Mill was custom-fabricated for and installed by Quality Chemical Corporation of Wilson, N. C., for the pulverization of DDT, aldrin, TDE, dieldrin, endrin, B.H.C., chlordane and other insecticides and fungicides produced by the North Carolina firm. Sturtevant says that it was the extremely successful performance of this unit that prompted them to add the unit to its line of processing equipment. The Pulver-Mill is a vertical impact mill with an integral air classifier for the extremely fine grinding of soft, non-metallic materials.

QUALITY FORMULATES 67 CHEMICALS

The 24" diameter Pulver-Mill at Quality Chemical, which has been operating on 40 horsepower for over a year, has been handling approximately a ton an hour of various fungicides and insecticides, producing a consistently high quality end product. Of the 100 insecticides, fungicides, fumigants, defoliants, preservatives and miscellaneous chemicals offered by the company, 67 now are formulated by Quality Chemical. Quality also saves an undisclosed sum by pulverizing at its own facilities.

The pulverization of the products is important to assure proper dispersion of the finished insecticide over as much of a plant leaf as possible. To do this effectively, the fines must be in the low micron range. With the Pulver-Mill, size of particles can be regulated easily by adjusting the number of selector bars at the top of the mill housing. At Quality, the average feed is reduced to approximately five microns. The minuscule particles then are sold directly as products or are blended into more complex farm chemicals.

Pre-determined proportions of toxicant and attapulgite clay are introduced into an elevator which conveys the ingredients to a ribbon blender which mixes them prior to pulverization, and discharge directly into the variable rate screw feeders of the Pulver-Mill. Special vanes within the mill create a whirling vertical air flow which pulls the ingredients into the pulverizing

zone where revolving impactors crash them against stationary wall impactors. This double impactor action, combined with attrition of particles against the housing walls, is performed through pulverization. Sturtevant-designed deflector wall construction assures return of oversize particles to the grinding zone while a whirlwind exhaust fan sucks the other fines upward through the revolving centrifugal selector arms which guard against oversize a second time, allowing only particles of desired fineness to be blown to the dust collector. Particle size is controlled by the number of selector bars employed, the feed rate and vertical air flow. Quality uses from six to twelve bars on various products.

The whirling air flow principle upon which the Sturtevant Pulver-Mill operates, has a cooling effect on the material being ground and makes possible the effective reduction even of some heat-sensitive materials. (For materials that are extremely heat-sensitive, refrigerated air can be introduced.)

INERT GASES CAN BE EMPLOYED

The Pulver-Mill also can employ inert gases for air flow if required. In addition, Sturtevant offers a replaceable interior rubber liner on those units which will be employed in the grinding of materials that have a tendency to adhere to steel.

Quality Chemical now has close quality control over two-thirds of its formulated products and is able to show a higher profit margin than was possible when the company bought and sold formulated products. The company now is assured of a consistent end product of pre-determined low micron size. These benefits have been substantial for the firm engaged in the highly competitive farm chemicals business.

Like all other Sturtevant equipment, the Pulver-Mill incorporates lifetime construction and one-minute accessibility to all moving parts, thanks to open-door construction. ▲



Synthesis gas purification units at Shell Haven.

New AMMONIA PLANT Serves U.K. Markets

*Drawing on ammonia production
experience in both the United States
and Holland, Shell Chemical Co.*

*Ltd. operates a new plant at Shell
Haven, Essex, England.*

By J. GRINDROD

BUILT on the basis of knowledge and experience gained in ammonia production both in the United States and in Holland a new plant with a capacity of 75,000 tons of ammonia a year has recently been placed in production by The Shell Chemical Co. Ltd. at Shell Haven Essex, England. Of this total production 60,000 tons of ammonia will be sold as such and the balance of 15,000 tons will be used by Shell to manufacture ammonium nitrate/chalk fertilizer, or "Nitra-Shell" for the U.K. market.

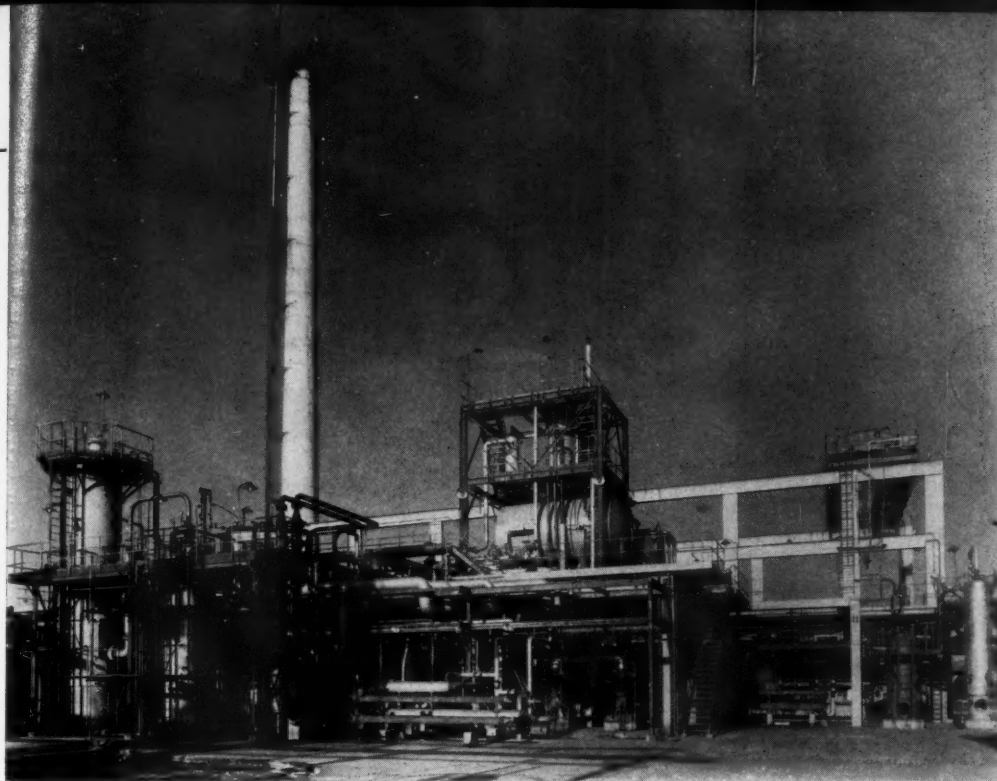
Until recently, the nitrogen fertilizer industry in Britain had been based on coke, but, with the bringing to commercial fruition of the Shell Gasification Process, whereby any petroleum fraction can be used, ammonia and nitrogenous fertilizer plants can now be built where they can best serve the needs of the market.

LINDE-FRANKL SYSTEM FOR AIR SEPARATION

Since the air is required as nitrogen for ammonia synthesis and as oxygen for the Shell Gasification Process, an air separation unit is used which operates according to the Linde-Frankl system. Compressed air is cooled in stone-filled regenerators to within a few degrees of its dewpoint; it is then partly liquified and finally rectified in a two sectioned column to produce 95 per cent pure oxygen and a nitrogen fraction containing not more than 0.01 per cent of oxygen. Before leaving the unit, the cold products give up their cold to the regenerators, which in turn cool down the incoming air.

Hydrogen for the ammonia synthesis is derived from gas prepared from fuel oil by the Shell Gasification Process. This is based on the noncatalytic partial oxidation of hydrocarbons and has the following significant features: the feedstock may range from methane to heavy fuel oil; operation may be at any

FARM CHEMICALS



The pressure oil gasification plant.

pressure above atmospheric; most of the heat developed by the reaction may be recovered as high pressure steam; the equipment is compact, and carbon formed during the partial oxidation is easily and efficiently scrubbed from the gas.

Provision is made for the complete separation of carbon from the wash water which may then be recycled while the separated carbon is used as fuel.

At Shell Haven, heavy fuel oil is used as feedstock and the synthesis gas is prepared in four reactors.

The raw gas from the partial oxidation section contains, in addition to hydrogen and carbon monoxide, some carbon dioxide, up to 1 per cent vol. of hydrogen sulfide, (depending on the amount of sulfur in the feedstock) and lesser amounts of methane and carbonyl sulfide. It is essential to remove the bulk of the sulfur compound before the gas passes to the carbon monoxide conversion unit. Because of the relatively large quantity of hydrogen sulfide to be removed, a regenerative process is desirable, and in view of the high carbon dioxide content it should be selective for hydrogen sulfide removal.

SHELL PHOSPHATE PROCESS INSTALLED

It was decided to install the Shell phosphate process (the best for this purpose). In this system tripotassium phosphate absorbs the hydrogen sulfide and some of the carbon dioxide under elevated pressure at ambient temperature or a little above, and is regenerated by boiling the solution at lower pressure. After treating, the outlet gas contains about three quarters of its original content of carbon dioxide, but hydrogen sulfide is reduced to about 0.01 per cent vol.

From the Shell phosphate treater, the desulfurized synthesis gas passes to the carbon monoxide converter, where, by reaction with steam, carbon monoxide is converted to carbon dioxide and hydrogen.

The reaction takes place in two parallel reactor systems and employs an iron/chromium catalyst. The incoming gas is first saturated with water vapor, then heat-exchanged against hot partially-converted gas and finally superheated steam is added just before the gas enters the converters. In the upper catalyst bed the greater part of the carbon monoxide is converted and there is a sharp rise in temperature. The partially converted gas is cooled by heat exchange with incoming feed and passes to the lower catalyst bed where conversion continues until the carbon monoxide content of the outlet gas has been reduced to a low figure.

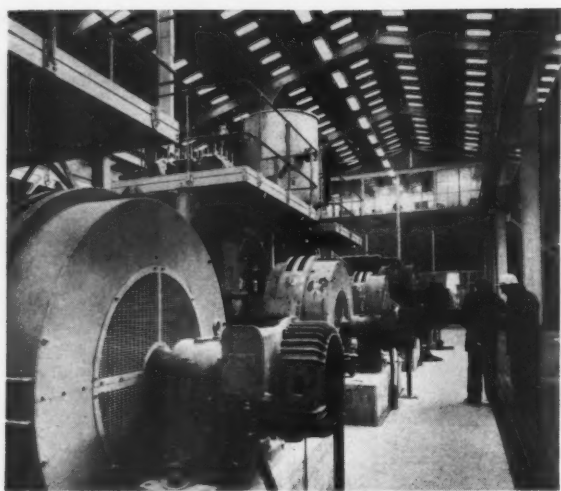
REMOVING HYDROGEN SULFIDE

At the outlet of the carbon monoxide conversion unit, the synthesis gas contains about 0.05 per cent vol. hydrogen sulfide, which is rather higher than the hydrogen sulfide content at its inlet, owing to the conversion of carbonyl sulfide to carbon dioxide and hydrogen sulfide. It is essential to remove this hydrogen sulfide before the synthesis gas reaches the carbon dioxide absorption unit. The method adopted is oxidation to sulfur by passing the gas, to which a little oxygen has been added, over activated iron oxide. In this way the hydrogen sulfide content is reduced to a negligible value.

Still containing carbon monoxide, the synthesis gas leaving the oxide boxes has had all the other major impurities removed except carbon dioxide. This constituent can be absorbed in a number of reagents; after considerable investigation it was decided to use a modification of the hot potassium carbonate process. This modification consists in the addition of a promoter, which leads to higher absorption and desorption rates of carbon dioxide.

Final removal of carbon dioxide is completed by a

PRODUCTION METHODS



The compressor house at Shell Haven.

two stage caustic soda wash. At this stage, besides hydrogen, the synthesis gas contains some carbon monoxide, a little nitrogen, argon, methane and oxygen, and traces of carbon dioxide.

All these contaminants must be removed before the gas can be charged to the ammonia synthesis reactors.

The final purification of the synthesis gas is achieved by scrubbing it with pure liquid nitrogen; the carbon monoxide, methane, argon and oxygen are all liquified and dissolved in the excess liquid nitrogen. Purified hydrogen containing negligible amounts of impurities and mixed in the correct proportions with pure nitrogen passes forward to the ammonia synthesis section.

For the actual ammonia synthesis, the Fauser-Montecatini process has been adopted. This operates at a pressure of 250 to 350 atmospheres and the heat of reaction is used for the generation of steam in waste-heat boilers. Cold feed together with the recycle gas entering the reactors passes through heat exchangers countercurrent to the reacted gas and enters the catalyst-containing zone. Heat of reaction is absorbed in coils through which water is circulated in closed circuit. This in turn rejects the heat to boiler water for steam raising.

After leaving the reaction zone the converted gas is further cooled, first by incoming feed and then by cooling water. Liquid ammonia is collected in the primary ammonia separator and is pressured into the primary ammonia flash vessel. The flashed gas released here contains some nitrogen, hydrogen, argon and methane and is recycled to the suction of the feed gas compressor, while the liquid goes to storage. Unconverted gas and ammonia vapor flow from the top of the primary ammonia separator to the suction of the circulating gas compressor and further ammonia separates as liquid in the secondary ammonia separators. Recycle gas from the top of the secondary separator joins the fresh feed to the reactors, while the liquid joins that from the primary separator and goes to storage.

Liquid ammonia is pumped from storage by the ammonia shipping pumps to Fisons Limited. Measurement is normally by flow meters, but a weigh tank is provided to allow periodic checking of the flow meters.

Liquid ammonia is also used for refrigeration purposes in the Shell Chemical Fertilizer Plant and the vapor returned is used as feedstock to the nitric acid and ammonium nitrate plants. If the return from the refrigeration sections is more than is required for these purposes, it is compressed and returned to liquid storage.

The manufacture of nitric acid from ammonia consists of the oxidation of ammonia over a precious metal catalyst to nitrogen oxides followed by the absorption of the oxides in water to yield nitric acid. There are a number of commercially established processes available and these differ chiefly in the pressure at which the oxidation and absorption take place.

Ammonia vapor is preheated and mixed with the primary air before entering the reactor where burning to nitric oxide takes place on the surface of the catalyst. The heat of reaction is removed first in a steam superheater, secondly in a waste heat boiler, thirdly by heat exchange with tail gas, fourthly by heat exchange with boiler feed water, and finally in water coolers. The process gas, enriched with secondary air which has previously been used for bleaching raw nitric acid, enters the oxidation towers where the nitric oxide is oxidized to nitrogen dioxide and then passes up the absorption towers countercurrent to dilute nitric acid. Make-up water is injected at the top of the second tower at such a rate that concentrated acid of the desired strength flows from the bottom of the first tower. The acid is then bleached by countercurrent stripping with secondary air.

Tail gas from the top of the second absorber still contains traces of oxides of nitrogen. To avoid the possibility of air pollution, these traces of oxides in the tail gas are reduced to nitrogen by fuel gas over a catalyst developed by Engelhard Industries Limited, the final effluent containing only 10 per cent of that originally present. The heat energy of this tail gas is recovered by cooling it in a waste heat boiler and finally discharging it to atmosphere through an expansion turbine.

PREPARING "NITRA-SHELL"

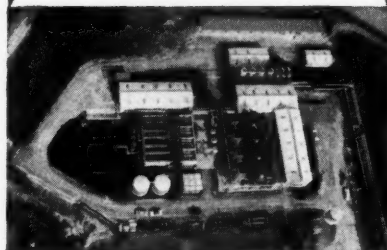
"Nitra-Shell" is prepared from chalk and ammonium nitrate manufactured from the ammonia and nitric acid produced at Shell Haven. Its manufacture, which operates at a constant rate throughout the year, involves features that differ very considerably from those of other Shell Chemical plants in that the handling of large quantities of solids is involved. In the design of the plant great emphasis has been laid on mechanical handling and automatic control. The drying and powdering of chalk and the sizing of "Nitra-Shell" granules inevitably creates dust and great attention has therefore been paid to removing dust from all gas and air streams before they are discharged to the atmosphere.

Wet chalk is delivered by road and dumped directly into the boot of a bucket elevator which transports the chalk to a belt conveyor. The latter delivers the chalk to a storage hopper from which a screw conveyor transports it to the attritor where it is ground and dried. The hot gases used for drying the chalk

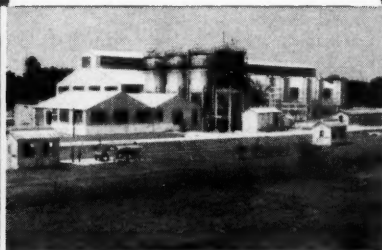
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POINTS OF DEPARTURE

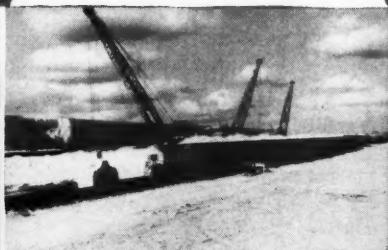
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TEXAS**



**MOSS BLUFF,
TEXAS**



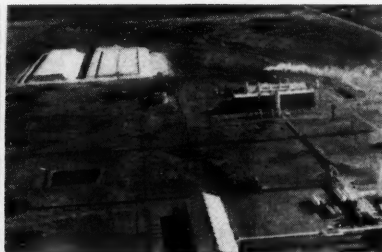
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In addition to these six producing properties, stocking and distribution centers are being set up, thus broadening the TGS Service to industry. Ample supplies of both molten and solid sulphur will be available at these centers. Cincinnati, the first of these units, is now in full operation.



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PRODUCTION METHODS

carry it forward to a cyclone, where the dry powdered chalk is knocked out and carried forward to the dry chalk storage-hopper. The gas stream from the cyclone is freed from chalk fines by passing through a bag filter.

The chalk from the dry chalk storage hopper is carried by a screw conveyor to a second hopper, where it is joined by the fines removed in the bag filter, and then transported pneumatically to the hopper from which it is fed to the process.

NEUTRALIZING GASEOUS AMMONIA

Gaseous ammonia from the synthesis unit is neutralised in the saturator by nitric acid from the ammonia oxidation plant. This reaction releases a considerable amount of heat and causes most of the water to vaporize and leave the system as superheated steam. From the saturator ammonium nitrate containing a little water flows to the concentrator where most of the latter is flashed off under reduced pressure, and the almost water-free ammonium nitrate passes to the mixing granulator, where it is joined by a mixture of powdered chalk, "Nitra-Shell" fines and crushed over-size "Nitra-Shell" particles. From the granulator the mixture flows as a semi-plastic mass to the rotary drier where the "Nitra-Shell" particles are completely dried and assume their characteristic spherical shape.

The particles are then screened to remove oversized lumps and are lifted by a bucket conveyor to a double deck sieve where final grading is accomplished. The optimum particle size is about 2.5 mm in diameter and oversize particles are crushed and, together with

Nitra-Shell storage building during construction. It is 65 feet high, 300 feet long and 100 feet wide.



undersize particles, fall to the recycle conveyor which carries them back to the granulator. The correctly graded product is carried by a vibrating conveyor to the powdering drum where it is mixed with the total dry chalk flow delivered from the dry chalk hopper. The powdered granules are separated on a final sieve from the bulk of the chalk which is then carried by the recycle conveyor to the granulator.

The finished "Nitra-Shell" granules are cooled and de-dusted and lifted by the final product elevator to a belt conveyor which transports them over a totalizing weigher to the storage building. The air used in the de-duster passes through a cyclone to knock out entrained chalk which is discharged to the recycle conveyor, and finally through a water scrubber before discharge to atmosphere.

Of parabolic section, the "Nitra-Shell" storage building is 300 feet long, 100 feet wide and 65 feet high. In order to cater for off season storage the capacity of the building is 20,000 tons, the "Nitra-Shell" being stored loose, in bulk. (Stocks will also be stored in depots in many parts of the country). In view of the hygroscopic nature of ammonium nitrate, it is essential that the "Nitra-Shell" storage building should be waterproof and this has been accomplished by covering the concrete structure with a layer of bitumenized felt.

ON TO THE STORAGE BUILDING

"Nitra-Shell" enters the storage building on a conveyor leading from the production building and is transferred to the product distribution conveyor which runs the whole length of the building under the apex of the roof. A movable tipper is provided so that the "Nitra-Shell" can be discharged on either side of the belt at any position along its length.

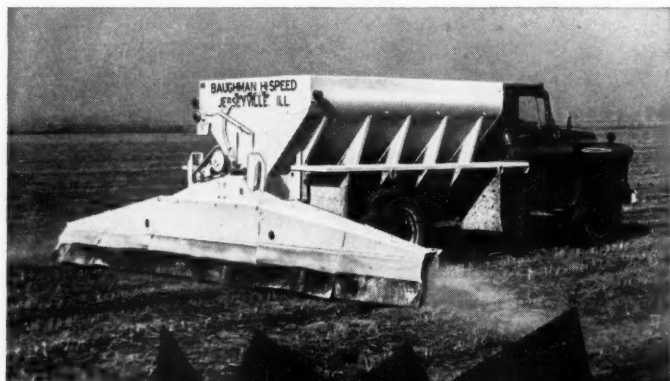
The "Nitra-Shell" is delivered to the bagging section by a harvester. This has a rake jib which can be moved through 270 deg. in a horizontal plane and also is capable of being elevated. The jib is set against the side of a pile of "Nitra-Shell" and draws the product to a secondary elevator which lifts it further into a hopper. From this the fertilizer discharges to a belt conveyor which feeds another elevator which in turn discharges through a hopper on to the collection conveyor.

Capable of moving the whole length of the building on a rail track, the harvester can reach all the material in the store. All movements are controlled from a sealed dust-free cabin in the machine which is continuously supplied with fresh air.

The collection conveyor discharges on to another conveyor which carries the "Nitra-Shell" to the main storage hoppers in the bagging building. These are two square vessels divided by a central wall, and each section has four conical outlets which discharge to individual weighing machines. They have a capacity of 1 cwt. discharge at a rate of five discharges a minute. From the weighing machines the product is taken to the bag-filling machines and thence to rail or road loading conveyors. The automatic equipment is fully served by interlocking safety devices and alarms and the whole operation can be carried out with a minimum of supervision and labor. ▲

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on the K-5
Lime and Fertilizer Spreader



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Better Service Through Better Engineering.
Service and Parts from 200 Service Branches.

Tight money — symptom of weak marketing

A banker leans back in his chair and begins to dictate a speech on credit which he plans to deliver before a group of colleagues. The words come out loud and clear:

"The biggest bargains on the farm are fertilizer and pesticides. Without them, a farmer would be hopelessly crushed in today's price-cost squeeze. They can truly be called miracles of the 20th Century."

Through with his dictation and assured that he has the finest speech he's ever heard on the subject, he calls in his farm representative, a former vocational agriculture teacher who really knows farmers, and thanks him for the down-to-earth information he received from him for his talk.

Then picking up a copy of *The Wall Street Journal*, he reads what one chemical executive has to say about "the field of miracles":

"Our most desperate competitor sets the price."

Visibly shocked, the banker asks his educator-turned bank farm representative:

"Why is this? Do they really have to give this stuff away? Can you imagine the pharmaceutical business giving penicillin away? Didn't I just infer in my speech that these chemicals are just as important to the farmer as penicillin is to society?"

The representative is a little cautious, but finally remarks:

"Well, I can speak only from my experience in teaching, because I've been here only a short time. But I think it's common knowledge that the farmer knows if he 'holds out long enough' he can expect a general panic by most companies. Some little outfit allows a cut—and there goes the price."

"But what about market research?" asks the banker. "Don't these companies *know their products* and what the market is going to be like? Don't they have facts on inventories, demand, prices, planting intentions of farmers and the like?"

"Well, you'd think they would," the representative answers as he fumbles in his pocket for a piece of paper. "Just the other day I clipped something out of the *New York Herald Tribune* that made good sense to me. The fellow's name was Brown Bolte, president of Sullivan, Stauffer, Colwell & Bayles.

"He listed these yardsticks as important in

judging a product's sales potential:

"(1) Does it make a contribution that consumers will recognize and want? Can the product's superiorities be translated into ad promises to which consumers will readily respond?"

"(2) Can the product be marketed at a price acceptable to consumers? Will the product at that price turn up gross revenue to provide a fair profit and strong promotion?"

"I'm going to talk to XYZ Chemical Company about this," the banker replies. "We're considering a new credit program with them. You know, we never really did discuss their market research program as well as we should have.

"I think a company can carry this 'miracle business' a little too far."

"What do you mean?" asks the representative.

"Well, I've used the scissors myself. I have a clipping here from a talk by Ernest A. Jones, president of MacManus, John & Adams, Inc. He pin-pointed this problem before the January meeting of the Synthetic Organic Chemicals Manufacturers Association of the United States. I think it's appropriate for the farm chemicals industry, too.

"Don't take your miracles to market in a horse and buggy," he told the group.

"Integrated merchandising efforts have never been more imperative. For the day of the dawdling dollar is gone. And the day of the stand-pat merchandiser is fast going."

Reflecting for a moment, the banker then brought up another point.

"You know, the farm chemicals industry has a long way to go to catch up with other businesses on this matter of financing, too. Remind me to mention to XYZ Company that I'd like to see them get together with their dealers and develop a workable cash flow chart. Something that will show us *the problem* they're facing. We know they don't have the even flow of cash that other businesses with diversified lines have. With the information you gave me about their customers, though, I think we can do business. In fact, we may revise our bank standards considerably.

"Doggone it, I'm sure glad we set up that farm department," he concluded as he slapped the representative on the back.

GORDON L. BERG



The extra care that produces
SWIFT'S PHOSPHATES
 puts customer satisfaction
 in your goods!



Extra care in our laboratories assures that you get the exact grade you desire.

P-3R

... And that *extra care* is just as real as the people who give it ... people like your customers ... people like your friends and neighbors—second and third generation people with the phosphate business literally bred into them working with Swift, the oldest phosphate operator in Florida.

Swift's extra care may very well offer you the opportunity to improve your customer satisfaction ... your plant operations ... and your profits. It's worth checking into! Have a Swift Phosphate Center Representative outline the advantages Swift offers you in phosphates—triple, rock or ground rock.

THE SERVICE CENTER FOR ALL YOUR PHOSPHATE NEEDS

**SWIFT & COMPANY
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